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Utah Economic and Business Review

Volume 50
Number 9
September 1990

BEBR

graduate school
of business
bureau of economic and
business research
university of utah

UTAH'S ELECTRONICS INDUSTRY

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A study of Utah's electronics industry was completed in 1990 by the Bureau of Economic and Business Research for the Utah Division of Business and Economic Development.[1] A major objective of the study was to develop an economic profile of Utah's electronics industry including an analysis of the industry's economic impact on the state, its employment trends, chronology of development and industrial structure. This economic profile, along with a discussion of Utah's most significant locational advantage for the industry, i.e., favorable labor market conditions, are included in the following article.

Unless otherwise noted, the term Electronics Industry is defined as companies within the three-digit Standard Industrial Classifications of 357 and 367 as determined by the U.S. Office of Management and Budget, see below:

- 357 Computer and Office Equipment
  - 3571 Electronic Computers
  - 3572 Computer Storage Devices
  - 3575 Computer Terminals
  - 3577 Computer Peripheral Equipment, nec
  - 3578 Calculating and Accounting Equipment
  - 3579 Office Machines, nec

- 367 Electronic Components and Accessories
  - 3671 Electron Tubes
  - 3672 Printed Circuit Boards
  - 3674 Semiconductors and Related Devices
  - 3677 Electronic Coils and Transformers
  - 3679 Electronic Components, nec

A PROFILE OF UTAH'S ELECTRONICS INDUSTRY

Utah's electronic industry is comprised of 71 companies engaged in manufacturing activities that make a substantial contribution to the economic base of the state. In 1989 these companies employed more than 11,400 workers, about 1 out of every 10 manufacturing employees and paid over $347 million in wages and salaries. The average annual 1989 wage rate for the industry in Utah was $30,375; considerably higher than the state's average manufacturing wage rate of $24,108 and more than 60 percent higher than the state's average nonagricultural wage rate of $18,696.

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[1] "Electronics Target Industry Study"

High wages enhance the industry's economic contribution to the Utah economy as measured by direct and total economic impacts. In the case of income, direct impacts are measured as the wages and salaries paid by the electronics industry; whereas the total economic impact includes not only the wages and salaries of the industry but also the wages and salaries generated when employees of electronics companies spend their income on household consumption. This "multiplier effect" of 1.9 means that $1 of income paid to an employee of an electronics company translates into $1.90 in total income impact.

Estimating the employment "multiplier effect" requires a similar methodology. The total income and employment impacts of the electronics industry are given below:

The Economic Impact of Utah's Electronics Industry

Direct Employment (1989)[2]	11,442
Direct Wages and Salaries (1989)[2]	$347.5 million

Total Direct and Indirect Economic Impact Measured by Employment and Income Multiplier[3]

Income Multiplier of 1.9
Total Direct and Indirect Income
1.9 X $347.5 million = $660.3 million

Employment Multiplier of 2.33
Total Direct and Indirect Employment
2.33 X 11,442 = 26,659

Average Annual Wage in Utah (1989)[4]

Electronics Industry		$30,375
Manufacturing Sector	$24,108	
Nonagricultural Wage	$18,696	

Employment Trends

Since 1973 employment in the electronics industry in Utah has increased from 4,800 to 11,400 employees but the growth has not been a steady ascent. Electronics employment grew each year from 1973 to 1984 when the industry reached its peak employment of 15,500; but in 1985 as the U.S. electronics industry entered an era of heightened foreign competition, aggressive pricing and shorter product cycles, employment began to decline both nationally and locally.

Although the recent sluggish performance of Utah's electronics industry reflects national trends, the rate of employment decline in the state has been more precipitous than that experienced by the industry nationally. Between 1984 and 1988 (the most recent national data) U.S. electronics employment declined only 8.1 percent compared to a 26.2 percent drop in Utah over the past five years, (Table 1 and Chart 1).

The cause of Utah's accelerated employment decline lies in the structure of the state's electronics industry. Utah's electronics industry is particularly vulnerable to foreign competition and recently released data show just how serious the impact of foreign competition has been on the industry. Since 1979 the U.S. factories' share of the U.S. computer and semiconductor markets has fallen from more than 90 percent to about 65 percent.[5] As foreign competition has chipped away at market share, electronics companies have reacted by cutting the number of production employees. States like Utah, where a large percentage of the electronics workers have been engaged in production activities of computers and semicondutor devices, have experienced disproportionate employment declines.

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[2] Utah Department of Employment Security.

[3] U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input/Output Modeling System.

[4] U.D.E.S.

[5] U.S. Department of Commerce, Semiconductor Industries Association, Electronic Industries Association.

Table 1
Employment Growth in Utah's Electronics Industry
(SIC 357, 367)

Year	SIC 357	SIC 367	Total
1973	2,979	1,862	4,841
1974	3,421	2,392	5,813
1975	3,550	2,550	6,100
1976	3,652	2,728	6,380
1977	3,924	2,995	6,919
1978	4,310	3,644	7,954
1979	5,047	4,446	9,493
1980	5,607	5,473	11,080
1981	6,220	5,983	12,203
1982	6,714	5,772	12,486
1983	7,564	5,352	12,916
1984	8,672	6,829	15,501
1985	8,823	5,757	14,580
1986	8,618	5,738	14,356
1987	8,343	5,224	13,567
1988	6,670	5,756	12,426
1989[a]	2,756	8,686	11,442

[a] Prior to 1989 Unisys was included in SIC 357. In 1989 Unisys was moved to SIC 367, which explains the large employment swing between these two SIC categories.

Source: Utah Department of Employment Security, Volume III, *Labor Market Information*.

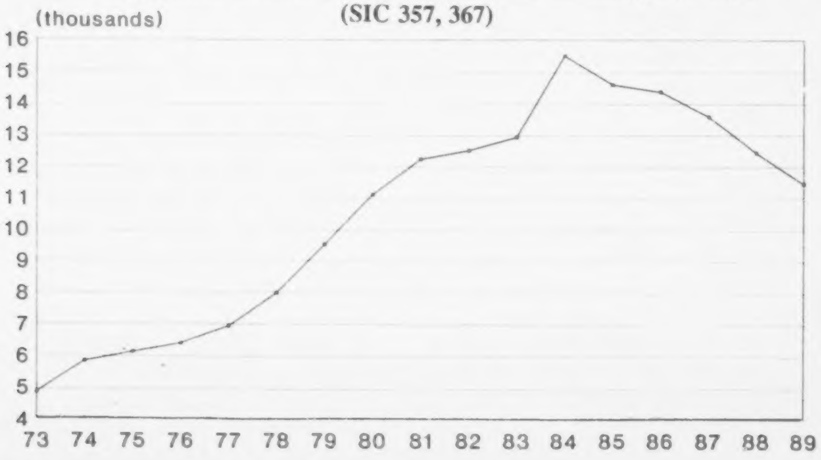
Location of Electronics Companies in Utah

The beginnings of Utah's electronics industry can be traced to Varian-Eimac, which opened a radio tube plant in 1941 under the name of Eitel-McCullough (Eimac). During World War II Eimac's employment peaked at 1,700. The company's name change following its purchase in the 1960's by Varian Associates of California. Today, Varian-Eimac employs 1,000 people and continues nearly 50 years of operation in the state. Varian-Eimac's Utah facility produces the world's most advanced x-ray tubes as well as tubes for the broadcast industry and ham radios.

Eimac with original headquarters in San Bruno, California, was the first national company to locate an electronics manufacturing facility in Utah. Most of the major electronics employers in the state are national companies that have located manufacturing facilities. Following Eimac's lead, Sperry-Univac (now Unisys) located in Utah in 1956. Ten years later Signetics Inc., a semiconductor manufacturer, located in Provo. In 1977 National Semiconductor selected West Jordan as a site and in 1979, Bourns Incorporated located facilities in Ogden and Logan.

Evans & Sutherland, which began operations in 1968, was the first major "home grown" electronics company. The only other "home grown" company

Chart 1
Employment Growth of Utah's Electronic Industry, 1973-1988
(SIC 357, 367)



Utah Department of Employment Security, years as indicated.

with more than 100 employees is Iomega, which began operations in 1980.

The chronology of establishment or location of Utah's major electronics companies shows that seven of the 15 electronics companies that now employ more than 100 people were established in Utah between 1977 and 1983, Table 2. From 1983 to 1989 there were no additions to the list of Utah's major electronics employers; a consequence of the industry's slow growth and limited new plant expansions during the mid-1980's. In 1989, however, two national companies selected Utah as a location for new manufacturing facilities for the assembly of printed circuit boards; Everex in St. George and Compaq in Salt Lake County.

Table 2
Chronology of Utah's Major
Electronics Industry
(Over 100 Employees)

Company	Year Located in Utah
Home Grown	
Evans & Sutherland	1968
Radix	1969
DOD Digitech Electronics	1978
Lundahl Inc.	1980
Iomega	1980
Salt Lake Circuits	1983
National Expansions	
Varian-Eimac	1941
Unisys	1956
EDO Western	1958
Signetics	1966
National Semiconductor	1977
Sensor Controls	1979
Bourns Network	1980
Everex	1989
Compaq	1989

Source: Bureau of Economic and Business Research.

The Structure of the Electronics Industry In Utah

Utah's electronics industry is characterized by employment concentration in a few large firms. Of the 71 electronics companies in the state, there are only seven with more than 500 employees. These seven firms account for nearly 80 percent of total employment among all electronics companies, Table 3.

The employment in Utah's electronics industry is most heavily concentrated in the production of semiconductor devices. This subsector's share of electronics employment has remained nearly constant since 1982. At that time 27.6 percent of the employees in Utah's electronics industry were employed in semiconductor manufacture compared to 27.0 percent in 1989, Table 4.

In sharp contrast the share of electronics employment in the manufacture of computers in Utah has declined significantly from 35.2 percent in 1982 to only 12.8 percent in 1989. Beehive International, Sperry Univac and Applied Digital Data Systems were all producing computers and/or computer terminals in 1982. By 1989 Beehive International was in bankruptcy and had ceased production of equipment; Applied Digital Data Systems was out-of-business in Utah; and Sperry Univac had merged with Burroughs to form Unisys, which shifted the function of Unisys' Utah operation from computers and terminals to integrated systems, software development and printed circuit board assembly. Consequently the employment in the manufacture of computers has dropped significantly in the state. Evans & Sutherland is now the largest producer of computer systems in Utah.

Employment Distribution by States

Given the small size of the Utah economy Utah's share of employment is, as expected, relatively small. In 1988 Utah had less than 2 percent of total industry employment in electronic computers and semiconductors.

The states with the largest concentrations of employment were: California, Massachusetts, Texas, New York and Arizona. Arizona's high ranking is attributed to the presence of Motorola's semiconductor operation in the Phoenix area which employs over 21,000 people. Arizona has a total of 31,000 employees in the semiconductor industry and 11,000 employees in the manufacture of electronic computers. Another western state of interest is Colorado which has over 10,000 employees in the manufacture of electronic computers.

Table 3

Major Electronics Companies in Utah
(1990)

Company	Employment	Product or Function
1. Unisys	3,000	Primarily engineering functions; systems integrator, electronic warfare, command control communication links.
2. National Semiconductor	1,250	Semiconductors; wafer fabrication.
3. Evans and Sutherland	1,200	Special purpose digital computers, flight simulation systems.
4. Signetics	1,100	Semiconductors; wafer fabrication.
5. Varian-Eimac	1,000	Electronic vacuum tubes.
6. Iomega	920	High performance removable mass storage products for desk-top computers.
7. Bourns Network	520	Resistor networks.
8. EDO Western	275	Ceramic materials, polymer composite structures.
9. Sensor Controls	200	Potentiometers that control electronic impulses.
10. DOD Digitech Electronics	100	Signal processors for music industry.
11. Lundahl Inc.	100	Ultrasonic instruments, i.e., sensing level control devices, positioning devices.
12. Radix	100	Hand-held meter-reading devices.
13. Salt Lake Circuits	100	Printed circuit boards.
Total Employment	9,865	

82% of Electronic Computer and Component Employment in Utah.

New Companies in 1989

1. Everex	100	Printed circuit boards.
2. Compaq	200*	Printed circuit boards.

*200 after first year, increasing to 600 after five years.

Source: Bureau of Economic and Business Research, University of Utah, 1990.

Data on the employment concentrations of the electronic industry by state appear in Tables 5 and 6. It should be emphasized that the electronic computer (3571) employment estimate for Utah in Table 5 includes 3,000 employees of Unisys which in 1989 were reclassified to SIC 3672. Given this reclassification, Utah's share of electronic computer employment in 1989 will probably drop below 1 percent of the total U.S. electronic computer employment.

UTAH'S LABOR MARKET ADVANTAGE

Utah's labor market is the single greatest advantage for electronics companies operating in the state. Interviews with human resource managers of 19 companies revealed near unanimity regarding the cost, supply and productivity advantages of the Utah work force. A brief discussion of each advantage and supporting statistics as presented in "Electronics Target Industry Study" is given below.

Labor Costs

An electronics company in Utah has the advantage of lower labor costs and hence the potential for higher profit. State wage data collected by the U.S. Department of Labor confirm that electronics companies in Utah have significantly lower labor costs. In 1988 Utah's electronic computers and semiconductor industries had the lowest average wage rate among selected western states. Wage rates in Utah were also well below the national average for the industry. The average wage for workers in Utah's computer industry was 83 percent of the national average and only 77 percent of the national average in the semiconductor industry, Tables 7 and 8.

Table 4

Percent Distribution of Employment in the Electronics Industry

Product	Percent Distribution Utah 1989
Electronic Computers	12.8
Semiconductors	27.0
Computer Storage Devices	9.2
Electron Tubes	9.5
Printed Circuit Boards	9.9
Electronic Components	6.8
Peripherals	1.2
Other	23.6
Total	100.0

Source: Utah Department of Employment Security; Bureau of Economic and Business Research, University of Utah; and U.S. Department of Labor, *Employment and Wages*, 1988.

Table 5

Employment Distribution for Electronic Computer
(SIC 3571)

State	1988 Employment	Percent of Total Employment
Top Five States		
California	57,874	18.9
Massachusetts	47,311	15.4
New York	41,713	13.6
Minnesota	33,386	10.9
Texas	19,974	6.5
Region		
Arizona	11,058	3.6
Colorado	10,648	3.5
Utah	5,239	1.7
Total U.S. Employment	306,775	

Source: U.S. Department of Labor, *Employment and Wages, Annual Averages, 1988*, Bulletin 2341, U.S. Government Printing Office, Washington, D.C.

Labor Supply

Utah's young and expanding population combined with vocational and higher education programs provide the local electronic industry with trained manufacturing and technical personnel. Although the statistical evidence for this conclusion is limited, there is ample anecdotal evidence from the interviews conducted with human resources managers. In addition to interviews at the major electronics companies, human resource managers at six small emerging electronics companies were also interviewed to see if this group's experience with the labor market differed from larger well-established companies. The open-ended comments on the conditions of Utah labor market are summarized as follows:

The labor supply conditions for unskilled and semi-skilled workers in Utah is excellent. For some companies, however, finding technicians with specialized skills can be a problem, but this labor shortage is not unique to Utah.

The labor market dynamics between the small electronics companies and the large electronic companies is acceptable, i.e., small companies note very few instances of losing key personnel to larger Utah companies.

Internal training programs and OJT provides most of the training needs for the largest companies although many have had some experience with state vocational training programs.

Local universities provide a significant number of engineers but firms also recruit from universities beyond Utah. Wage rates for engineers are set by the national market.

Table 6

Employment Distribution for Semiconductor Industry (SIC 3674)

State	1988 Employment	Percent of Total Employment
Top Five States		
California	64,137	24.5
Texas	43,847	16.7
Arizona	31,352	11.9
Massachusetts	18,996	7.2
New York	17,746	6.8
Region		
Colorado	3,745	1.4
Utah	3,063	1.2
Total U.S. Employment	262,277	

Source: U.S. Department of Labor, *Employment and Wages, Annual Averages, 1988,* Bulletin 2341, U.S. Government Printing Office, Washington, D.C.

Table 7

Annual Wages and Employment for Selected States in the Electronic Computers Industry (SIC 3571) 1988

State	Annual Average Wage	Annual Average Employment
Utah	$34,140	5,239
Nevada	$34,270	183
Oregon	$35,703	2,819
Colorado	$42,539	10,648
Arizona	$45,013	11,058
California	$47,151	57,874
New Mexico	(d)	
U.S. Average	$41,080	--

(d) not disclosed.

Source: *Employment and Wages: Annual Averages 1988,* Bureau of Labor Statistics, Bulletin 2341, U.S. Government Printing Office, Washington D.C. 1989.

Table 8

Average Annual Wages and Employment for Selected States in the Semiconductor Industry (SIC 3674) 1988

State[a]	Annual Average Wage	Annual Average Employment
Utah	$25,633	3,063
New Mexico	$30,016	2,462
Arizona	$32,535	31,352
Colorado	$33,634	3,745
Oregon	$35,345	6,807
California	$36,587	64,137
U.S. Average	$33,488	--

[a] Industry data for Nevada are suppressed due to the small number of establishments in the semiconductor industry.

Source: *Employment and Wages: Annual Averages 1988,* Bureau of Labor Statistics, Bulletin 2341, U.S. Government Printing Office, Washington D.C. 1989.

Table 9
Selected Data on Utah's Higher Education Programs in Electrical Engineering, Computer Science and Related Programs

Institution	Number of Faculty[1]	Degrees Awarded 1988			
		AS/AAS*	BS	MS	Phd
University of Utah					
Computer Science	28	-	37	19	4
Electrical Engineering	31	-	80	54	6
Materials Science	31	-	16	7	2
Mechanical Engineering	46	-	72	19	5
Total	136	-	205	99	17
Brigham Young University					
Electrical and Computer Engineering	22	-	116	25	3
Mechanical Engineering	18	-	92	22	5
Industrial Education	11	-	63	7	-
Technology	22	-	177	21	-
Computer Science	22	-	125	18	-
Total	95	-	537	93	8
Utah State University					
Electrical Engineering	25	-	31	27	3
Mechanical Engineering	12	-	44	11	-
Computer Science	13	-	42	36	-
Total	50	-	117	74	3
Weber State College					
Electronic Engineering Technology	9	0/11	97	-	-
Manufacturing Engineering Technology	13	0/3	14	-	-
Total	22	0/14	111	-	-
College of Southern Utah					
Mathematics/Computer Science	3	-	7	-	-
Electronics	2	0/10	-	-	-
Industry Technology	2	-	20	-	-
Total	7	0/10	27	-	-
Salt Lake Community College					
Computer Systems	24	68/153	-	-	-
Pre-Engineering	3	17/0	-	-	-
Total	27	85/153	-	-	-
Utah Valley Community College					
Computer Information System	5	8/17	-	-	-
Electrical and Automation Technology	7	2/34	-	-	-
Electronics Technology	16	42/48	-	-	-
Total	28	52/99	-	-	-
Grand Total	365	137/276	1,033	266	28

*Associate of Science/Applied Associate of Science.

[1] Does not include lecturers and emeriti.

In some cases the recruiting of professionals to Utah is hampered by the size of the Utah labor pool, i.e., a prospect may be discouraged by the limited number of other professional opportunities in the electronics industry in Utah.

Nearly all of the firms interviewed emphasized the importance of Utah's system of higher education in meeting a significant share of their professional and technical labor requirements. Each year Utah's four universities, two four-year colleges and two community colleges award degrees to over 1,700 graduates in electrical engineering, computer science and related programs, Table 9.

A portion of these graduates will find employment in Utah's electronics firms but it is impossible for the state's electronics industry to absorb all of these graduates. An occupational breakdown of the major electronics companies in Utah shows why. There are nearly 3,500 engineers, scientists, computer scientists and technicians currently employed in the electronics industry in Utah, Table 10. It takes only two years for the state's system of higher education to supply about the same number of engineers, scientists and technicians as are now employed by the electronics industry statewide. Therefore, most of the engineering and science graduates must find employment in other sectors of the Utah economy or seek employment out-of-state.

Table 10

Employment by Occupations in Utah's Major Electronics and Software Companies[a]

Occupation	Number	Percent of Total Employment
Scientists	44	.5
Engineers	1,735	19.0
Computer Scientists	757	8.3
Technicians	959	10.5
Hourly Manufacturing	3,376	37.0
Administrative and Support	2,250	24.7
Total	9,121	100.0

[a] Employment data from the 9 largest electronics companies in Utah.

Source: Bureau of Economic and Business Research, University of Utah.

Labor Productivity

Although labor cost and supply are meaningful advantages, productivity ranks as Utah's greatest labor market asset. Most of the human resource managers interviewed agreed that their Utah operations were among the most productive operations in their company. High productivity translates into lower turnover rates, lower absenteeism, the ability to learn new skills and for the firm, higher profitability. Cultural and educational factors are most often cited as the underlying cause for Utah's productivity advantage. Utah ranks second in the nation in percent of adult population that has completed high school (80 percent, compared to a national average of 66.5 percent) and fourth in percent of adult population with four or more years of college education.

Training programs offered by the Division of Vocational Education help to improve the productivity of Utah workers. The Division's Custom Fit Program provides tailored training for new or expanding companies. Custom Fit provides classroom training, on-the-job training, curriculum development, testing/assessment, and business revitalization. Training takes place at the business, educational institution or any agreed-on site. The Division's pre-employment training program has provided customized training for such electronics companies as Unisys, Signetics, National Semiconductor, Bourns Network and Iomega Corporation.

CONCLUSION

Despite Utah's labor market advantages, employment in the electronics industry continues to decline and the prospects for 1990-1991 are not encouraging. State-wide employment in the industry could fall below 11,000 workers for the first time in over a decade, as the slowdown in GNP and possibly a recession cut into the industry's growth rate and provoke further employment layoffs.

Utah Business Statistics

UTAH DATA	Jun. 1989	Jun. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	22,061	NA	NA	NA	21,381	NA
New Corporations (no.)	466	476	2.1%	494	451	9.4%
New Car, Truck, and Motor Home Sales (no.)	5,233	NA	NA	NA	5,101	NA
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	70.00	76.50	9.3%	74.57	70.37	6.0%
Lambs (cwt)	65.50	47.30	–27.8%	55.08	60.99	–9.7%
Milk Wholesale (cwt)	11.40	13.00	14.0%	13.36	11.90	12.3%
Alfalfa Hay, Baled (per ton)	79.00	86.00	8.9%	85.50	80.42	6.3%
Cattle Slaughtered (live weight) (thous. of lbs.)	50,642	48,485	–4.3%	47,655	47,365	0.6%
Construction						
Total Construction (thous. of dol.) 1	83,104.2	83,696.4	0.7%	81,538.7	67,669.8	20.5%
Residential	42,998.9	53,426.3	24.3%	41,308.1	33,411.4	23.6%
Nonresidential	26,823.2	21,505.4	–19.8%	24,059.0	21,562.7	11.6%
Additions, Alterations, and Conversions	13,282.2	8,764.8	–34.0%	16,171.6	12,695.8	27.4%
Total Permit Construction (thous. of dol.) 2	105,034.9	107,031.5	1.9%	89,276.8	73,927.0	20.8%
Residential	43,304.9	60,973.6	40.8%	43,502.5	34,617.4	25.7%
Nonresidential	43,498.5	30,552.6	–29.8%	30,688.1	25,413.4	20.8%
Additions, Alterations, and Repairs	18,231.5	15,505.3	–15.0%	15,086.3	13,896.1	8.6%
New Dwelling Units (no.)	547	709	29.6%	535	456	17.4%
Employment						
Civilian Labor Force (thous.)	794.2	796.6	0.3%	795.6	773.0	2.9%
Total Employed Persons	758.3	758.0	–0.0%	761.4	736.1	3.4%
Unemployed Persons	35.9	38.6	7.5%	34.2	36.5	–6.4%
Percent Total Labor Force	4.5	4.8	6.7%	4.3	4.8	–10.0%
Employees on Nonagricultural Payrolls (thous. of jobs)	697.7	731.0	4.8%	706.7	675.2	4.7%
Manufacturing	103.9	106.7	2.7%	104.2	101.4	2.8%
Mining	8.2	8.8	7.3%	8.5	7.9	7.2%
Contract Construction	27.9	28.9	3.6%	26.7	25.5	4.5%
Transportation, Communication, and Utilities	41.0	43.3	5.6%	42.1	40.3	4.2%
Wholesale Trade	39.0	40.9	4.9%	39.3	37.1	6.0%
Retail Trade	128.5	137.4	6.9%	131.9	124.1	6.3%
Finance, Insurance, and Real Estate	33.4	34.4	3.0%	33.6	33.2	1.1%
Services 3	167.8	179.7	7.1%	172.7	161.4	7.0%
Federal Government	41.0	40.6	-1.0%	40.3	39.7	1.5%
State Government 4	39.7	41.5	4.5%	41.1	39.2	4.9%
Local Government 4	67.5	68.8	1.9%	66.3	65.4	1.5%
Average Weekly Hours						
Manufacturing	39.7	39.5	–0.5%	40.0	40.3	–0.8%
Mining	40.9	42.7	4.4%	41.8	40.5	3.4%
Wholesale Trade	37.0	37.3	0.8%	36.4	37.5	–2.9%
Retail Trade	27.5	27.0	–1.8%	26.9	27.4	–1.9%
Amount of Unemployment Compensation (thous. of dol.)	4,118.9	4,097.2	–0.5%	4,927.4	5,295.0	–6.9%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,197.9	1,785.0	–18.8%	2,014.2	2,309.0	–12.8%
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	167,585.7	160,366.6	–4.3%	162,526.3	147,806.5	10.0%
Sales and Use Tax	71,666.5	76,359.3	6.5%	58,799.8	55,588.4	5.8%
Motor Fuel Tax	19,463.2	11,312.3	–41.9%	11,039.6	10,860.3	1.7%
Individual Income Tax	27,903.4	28,561.3	2.4%	54,073.2	50,656.5	6.7%
Corporation Franchise Tax	12,619.9	6,869.0	–45.6%	3,826.5	7,331.5	–47.8%
Production						
Crude Oil to Refineries (thous. of bbls.)	3,444.1	3,741.2	8.6%	3,557.4	4,368.8	–18.6%
Crude Oil (thous. of bbls.)	2,052.5	2,270.1	10.6%	2,345.3	2,505.3	–6.4%
Natural Gas (mil. of cu. ft.)	16,460.1	26,392.1	60.3%	24,764.4	22,503.7	10.0%
Coal (thous. short tons)	1,549.0	1,904.0	22.9%	1,847.3	1,566.2	17.9%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	1,111,024	1,106,525	–0.4%	1,005,773	918,624	9.5%
Highway Traffic Count Across State Lines	40,741	43,866	7.7%	42,444	NA	NA
Transient Room Taxes (thous. of dol.)	1,054.5	1,442.4	36.8%	569.7	575.2	–1.0%
Visits, State, Nat'l. Parks, Monuments (thous.)	1,920.0	2,079.2	8.3%	1,137.2	1,107.3	2.7%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	497,447	514,059	3.3%	507,906	493,952	2.8%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	186,818	194,979	4.4%	189,549	183,830	3.1%
Electric Customers (Residential)	482,800	490,216	1.5%	487,098	480,284	1.4%
Electric Customers (Commercial)	47,611	49,005	2.9%	49,129	47,458	3.5%
Natural Gas Customers (Residential & Commercial)	471,678	485,507	2.9%	480,073	465,461	3.1%
Natural Gas Customers (Industrial)	570	572	0.4%	568	558	1.7%

Utah Business Statistics

UTAH DATA	Jun. 1989	Jun. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	58.1r	61.1f	5.2%	57.2	55.0	4.1%
Unemployment Rate	4.2r	4.8	14.3%	4.0	4.3	–6.6%
Auth. Permit Construction (thous. of dol.)	23,074.8	12,425.0	–46.2%	9,971.3	9,205.5	8.3%
New Dwelling Units (no.)	78	99	26.9%	76	63	20.1%
Postal Receipts (thous. of dol.)	530.0	561.9	6.0%	642.6	516.2	24.5%
Electric Customers (Residential)	48,416	50,077	3.4%	49,596	48,499	2.3%
Electric Customers (Commercial)	3,519	3,667	4.2%	3,665	3,572	2.6%
Natural Gas Customers (Residential)	51,742	52,929	2.3%	52,386	51,131	2.5%
Natural Gas Customers (Industrial)	56	57	1.8%	56	54	2.9%
Telephone Lines in Service (Mt. Bell)(Residential)	56,859	60,343	6.1%	58,627	56,094	4.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	11,958	12,839	7.4%	12,415	11,663	6.4%
Salt Lake County						
Non-Ag. Employment (thous.)	356.7r	371.4f	4.1%	361.5	346.0	4.5%
Unemployment Rate	4.2r	4.5	7.1%	3.9	4.4	–11.1%
Auth. Permit Construction (thous. of dol.)	33,780.4	40,551.4	20.0%	38,012.6	31,313.2	21.4%
New Dwelling Units (no.)	181	209	15.5%	187	171	9.2%
Postal Receipts (thous. of dol.)	7,592.0	7,349.2	–3.2%	8,066.5	8,302.1	–2.8%
Electric Customers (Residential)	241,925	245,681	1.6%	244,800	241,546	1.3%
Electric Customers (Commercial)	20,721	21,202	2.3%	21,076	20,672	2.0%
Natural Gas Customers (Residential)	224,162	228,162	1.8%	226,548	222,573	1.8%
Natural Gas Customers (Industrial)	245	244	–0.4%	245	240	2.3%
Telephone Lines in Service (Mt. Bell)(Residential)	234,287	242,419	3.5%	239,041	232,440	2.8%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	113,044	118,304	4.7%	115,217	111,912	3.0%
Utah County						
Non-Ag. Employment (thous.)	85.6r	92.3f	7.8%	89.2	84.3	5.8%
Unemployment Rate	4.4r	4.6	4.5%	3.9	4.1	–6.1%
Auth. Permit Construction (thous. of dol.)	19,792.8	19,864.6	0.4%	13,421.8	11,903.4	12.8%
New Dwelling Units (no.)	105	142	35.2%	88	69	26.8%
Postal Receipts (thous. of dol.)	1,319.5	1,807.3	37.0%	1,630.6	1,326.9	22.9%
Electric Customers (Residential)	53,728	53,786	0.1%	53,256	52,846	0.8%
Electric Customers (Commercial)	5,918	6,522	10.2%	6,776	5,990	13.1%
Natural Gas Customers (Residential)	62,874	64,285	2.2%	63,759	62,430	2.1%
Natural Gas Customers (Industrial)	73	74	1.4%	73	71	2.8%
Telephone Lines in Service (Mt. Bell)(Residential)	65,481	66,203	1.1%	66,444	65,573	1.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	21,598	20,945	–3.0%	20.378	20,929	–2.6%
Weber County						
Non-Ag. Employment (thous.)	64.7r	67.4f	4.2%	65.9	63.4	3.9%
Unemployment Rate	5.5r	6.2	12.7%	5.2	5.7	–9.1%
Auth. Permit Construction (thous. of dol.)	7,740.4	6,526.8	–15.7%	6,627.8	5,147.3	28.8%
New Dwelling Units (no.)	44	60	36.4%	45	44	3.8%
Postal Receipts (thous. of dol.)	596.2	621.1	4.2%	706.4	684.8	3.2%
Electric Customers (Residential)	54,063	54,647	1.1%	54,497	53,906	1.1%
Electric Customers (Commercial)	4,970	5,035	1.3%	5,057	4,978	1.6%
Natural Gas Customers (Residential)	50,440	51,234	1.6%	50,932	50,218	1.4%
Natural Gas Customers (Industrial)	86	83	–3.5%	84	84	–0.2%
Telephone Lines in Service (Mt. Bell)(Residential)	47,345	46,990	–0.7%	47,191	46,940	0.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,288	13,161	7.1%	12,725	12,132	4.9%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
r	Revised
f	Forecast

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture*.
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report*.
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

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NATIONAL DATA	Jun. 1989	Jun. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,174.0	5,451.6	5.4%	5,338.7	5,050.8	5.7%
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,372.5	4,639.5	6.1%	4,514.6	4,240.9	6.5%
Industrial Production Indexes (seasonally adjusted) (1987=100)	108.4	109.8	1.3%	108.4	107.3	1.0%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	470.9	506.8	7.6%	494.7	452.0	9.4%
Net Exports of Goods and Services (bil.) (qtly.)	−51.3	−27.0	−47.4%	−35.4	−59.9	−40.9%
Exports of Goods and Services (bil.) (qtly.)	628.8	661.7	5.2%	647.4	595.1	8.8%
Imports of Goods and Services (bil.) (qtly.)	680.0	688.7	1.3%	682.8	655.0	4.2%
Index of Leading Indicators (1982=100)	144.0	146.0	1.4%	145.0	144.5	0.3%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	124.1	129.9	4.7%	127.0	121.2	4.8%
CPI-U (All Urban Consumers) Food & Beverages	124.9	131.7	5.4%	128.6	121.8	5.6%
CPI-U (All Urban Consumers) Housing	122.9	128.3	4.4%	125.6	120.6	4.1%
CPI-U (All Urban Consumers) Transportation	115.9	118.2	2.0%	116.0	111.8	3.8%
CPI-U (All Urban Consumers) Medical Care	148.5	161.9	9.0%	155.6	143.6	8.4%
CPI-U (All Urban Consumers) Energy	99.0	99.5	0.5%	96.1	91.9	4.6%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	114.1	117.9	3.3%	115.9	110.9	4.4%
GNP Price Deflator (1982=100) (qtly.)	125.8	130.9	4.1%	128.8	124.0	3.9%
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.1	124.8	0.6%	124.5	122.8	1.3%
Total Civilian Employment (mil.)	117.5	118.4	0.8%	117.9	116.3	1.4%
Unemployment Rate	5.3	5.2	−1.9%	5.3	5.3	−0.5%
Construction						
Total Construction (mil. of dol.)	26,387.4	23,027.4	−12.7%	20,606.7	21,848.2	−5.7%
Residential	11,973.4	10,433.0	−12.9%	9,551.7	10,232.6	−6.7%
Nonresidential	9,343.5	7,902.6	−15.4%	7,232.9	7,688.7	−5.9%
Non-Building	5,070.5	4,691.8	−7.5%	3,822.1	3,926.9	−2.7%
New Dwelling Units (no.)	133,256	108,400	−18.7%	104,987	119,121	−11.9%
Interest Rates						
Federal Funds Rate	9.53	8.29	−13.0%	8.55	8.91	−4.0%
Short Term (3-month Treasury bill rate)	8.22	7.74	−5.8%	7.75	7.92	−2.1%
Long Term (30-year Treasury bond yields)	8.40	8.62	2.6%	8.43	9.06	−7.0%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	11.07	10.00	−9.7%	10.30	10.56	−2.4%
Mortgage Rates (new homes)	10.09	9.80	−2.9%	9.78	9.28	5.4%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F.W. Dodge Report, McGraw-Hill: National Construction Data.

U.S. Department of Labor, Bureau of Labor Statistics: Consumer Price Indexes, Producer Price Index.

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Utah Economic and Business Review

Volume 50
Number 10
October 1990

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REGIONAL INPUT-OUTPUT MULTIPLIERS: CALCULATION, MEANING, USE AND MISUSE

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Introduction

John Maynard Keynes is supposed to have introduced the term *multiplier* into the jargon of economic science.[1] Keynes used the term to refer to the amplified effect of an initial economic stimulus after all of the secondary effects of the stimulus had worked their way through an economy. Later on in the same work[2], Keynes made an observation that now seems more than a little prophetic: "...practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist." Now, some 55 years later, most practical men (and women) seem to understand that every direct economic impact must have an amplified effect, so that the total impact will be some multiple of the direct impact. Indeed, there is perhaps no technical concept in economics that is so widely used (and misused) by non-economists as that of the multiplier.

The purpose of this article is fourfold: (1) to explain the concept of the multiplier as it is used in regional economic analysis, (2) to explain how multipliers are calculated using the input-output approach, (3) to point out some common misuses and misconceptions regarding the use of multipliers, and (4) to provide users with a set of income and employment multipliers for the Utah economy that is considerably more detailed than any previously available. Table 4 provides estimates of direct and total earnings coefficients as well as Type II income and employment multipliers for 411 industrial sectors of the Utah economy. The term *Type II* means that induced household consumption effects have been taken into account in the calculation of the multipliers, as well as direct and indirect interindustry effects.[3]

Multiplier Concept and Definitions

The term *regional impact multiplier* refers to the ratio of the size of the total effect on a regional economy of some initial direct exogenous impact to the size of the direct impact itself. There are a number of different kinds of multipliers that conform to this general definition. Three of these retain the traditional notion of an amplified effect, in the sense that the numerator and the denominator of the ratio are of the same unit of measurement so that the ratio itself is dimensionless. These are the *output multiplier*, the *income multiplier*, and the *employment multiplier*.

The output multiplier refers to the ratio of the change in total output that is required from all sectors of a regional economy to the direct change in the basic output of a particular sector of the economy. The income multiplier refers to the ratio of the change in total income earned by workers in all sectors of the regional economy to the change in earnings of workers directly engaged in the production of the basic output. Lastly, the employment multiplier refers to the ratio of the change in total employment of workers in all sectors of the regional economy to the change in employment of workers directly engaged in the production of the basic output.

The term *basic* in the above definitions refers to any expansion in output that comes about as a consequence of the infusion of funds from a source outside the regional economy, including, e.g., funds obtained to finance new construction. The distinction between funds generated internally and funds generated externally is important, because in order for there to be a multiplier effect there must be outside funds flowing into the regional economy to pay for the augmented production. In general, if funds are merely diverted from one sector to another within the regional economy there will be no multiplier effect. The expansion in one sector will simply be offset by the contraction in the other sector. The term *export*, incidentally, is often used synonymously with *basic*, while the term *residentiary* (referring to ouput that is produced for the use of the residents of a region) is used antonymously.

Estimation Using Input-Output Analysis

Though there are different approaches to estimating regional economic impact multipliers, the input-output approach is generally preferred (provided sufficient resources for the task are available). This is the approach taken in the estimation of the income and employment multipliers shown in Table 4. The input-output model underlying these multipliers was developed by the Bureau of Economic Analysis of the U.S. Department of Commerce (BEA). This model is a member of the RIMS II class of economic models, whose characteristics and applicability are documented in several BEA publications.[4]

The basic analytical construct used in the input-output approach is the interindustry transactions table. Essentially this table shows how the total output of each producing sector within a regional economy is distributed among purchasing sectors, or conversely, what the total input of each purchasing sector consists of in terms of regional producing sector source. From information contained in the basic interindustry transactions table it is possible to construct two derivative input-output tables that are analytically more useful than the interindustry transactions table. These derivative tables characterize the interindustry structure of the regional economy by means of two types of input-output coefficients.

An input-output coefficient may be described as the dollar value of a particular input required from sources within the region to produce $1 worth of a particular output; for example, the earnings of labor required to produce $1 worth of electric power. Input-output coefficients may be expressed in terms of either (1) direct requirements or (2) total requirements. Direct requirements include only those requirements that are purchased directly by the industrial sector under consideration, while total requirements include not only direct requirements but also the requirements generated through the purchases of primary suppliers from secondary suppliers, and the requirements generated by the purchases of the secondary suppliers from tertiary suppliers, and so on. Total requirements also include requirements generated through purchases of consumer goods and services from the trade and services sectors of the regional economy by employees of the sector under consideration as well as by employees of all the supplying sectors.

The electric power example may be carried further to distinguish and illustrate these two concepts. According to Table 4 Utah power plants directly require (on average) about 10.6¢ in direct earnings of labor to produce $1 worth of electric power. But purchases by the electric utilities sector from other sectors, particularly including the coal mining sector, result in additional indirect labor requirements. Total requirements though, include not only the direct requirements and indirect requirements generated by purchasing inputs from other industrial sectors, but also the induced requirements generated by household consumption expenditures out of the compensation received by labor participating in electric power production, both directly and indirectly. Thus, total earnings of labor involved in the production of $1 worth of Utah electricity amount to approximately 35.4¢ or about 3.3 times the direct requirement of 10.6¢. The ratio 3.3 is referred to as the income multiplier for the electric utilities sector.

The calculation of the direct requirements coefficients is quite simple. Each column entry in the interindustry transactions table is divided by the total output of the industry represented by the column. The result of this procedure is illustrated in Table 1. The total requirements coefficients are conceptually a bit more complicated. The direct requirements coefficients are first used to form a system of linear equations, each one equating the total output x_i of a given sector i to the output of the given sector required in production by other intermediate sectors plus the output of the given sector delivered to final demand y_i. Algebraically,

$$(1) \qquad x_i = a_{ij}x_j + y_i$$

where a_{ij} is the direct requirements coefficient representing the dollar value of input from sector i required to produce $1 worth of sector j output.

In matrix notation the entire system of equations can be expressed as

$$(2) \qquad \mathbf{x} = \mathbf{A}\mathbf{x} + \mathbf{y}$$

where **x** is a column vector of total outputs produced by each of the individual producing sectors, **y** is a column vector of outputs delivered to final demand by each of the individual producing sectors, and **A** is a square matrix of direct requirements coefficients a_{ij}, the first subscript locating the row position and the second subscript the column position of each coefficient within the matrix.

Given a vector of final demands **y**, the total output of each sector required to satisfy both intermediate and final demand requirements is given by the solution

$$(3) \qquad \mathbf{x} = (\mathbf{I} - \mathbf{A})^{-1}\mathbf{y}$$

where **I** is the identity matrix, and $(\mathbf{I} - \mathbf{A})^{-1}$ is the inverse of $(\mathbf{I} - \mathbf{A})$. The total requirements coefficients are simply the elements of $(\mathbf{I} - \mathbf{A})^{-1}$. The result of this calculation is illustrated in Table 2.

Income multipliers may then be derived by calculating the ratio of the total earnings requirement for each industrial sector in the $(\mathbf{I} - \mathbf{A})^{-1}$ matrix to the corresponding direct earnings requirement in the **A** matrix. Output multipliers may be derived by summing the coefficients in each column of $(\mathbf{I} - \mathbf{A})^{-1}$, excluding the household sector. The results of these calculations are illustrated in Table 3.

Employment multipliers may be calculated by transforming direct and total earnings requirements for each industrial sector into direct and total employment requirements through the use of industry-specific average wage rates as follows: Let e_i refer to direct earnings required per dollar of output of sector i as taken from the household row of **A**. Then define m_i as direct employment required per dollar of output in sector i, which is equal to e_i divided by w_i, where w_i is the average wage in sector i. Next, define a direct employment requirements vector **m** as a row vector consisting of the elements m_i. The vector of total employment requirements may then be derived as $\mathbf{m}(\mathbf{I} - \mathbf{A})^{-1}$. And employment multipliers may then be calculated by taking the ratio of each element in the total employment requirements vector $\mathbf{m}(\mathbf{I} - \mathbf{A})^{-1}$ to the corresponding element in the direct employment requirements vector **m**.

Multiplier Principles and Relationships

Certain general conclusions can be reached regarding the magnitudes of regional impact multipliers on the basis of a priori reasoning: first, generally speaking, multipliers will be larger in larger regions than smaller, because spending leakages tend to be larger in smaller regions. Thus, it is clearly inappropriate to apply a multiplier that has been estimated for a large regional economy for the purpose of estimating the impact of a project on a subregion of the larger region. Second, multipliers tend be larger for activity taking place near the center of a region than for activity near a region's borders, again because spending leakages will tend to be greater for activities near the boundaries of the region.

TABLE 1
HYPOTHETICAL DIRECT REQUIREMENTS FROM REGIONAL INDUSTRIES PER DOLLAR OF REGIONAL INDUSTRY OUTPUT

Producing Sectors	Purchasing Sectors				
	Sector A	Sector B	Sector C	Sector D	Households
Sector A	.15	.03	.04	.10	.06
Sector B	.22	.05	.08	.07	.05
Sector C	.10	.04	.10	.04	.15
Sector D	.08	.02	.03	.20	.30
Households	.20	.30	.40	.25	.01

Note: Each element represents the input directly required from the region's row sector per dollar's worth of output produced by the region's column sector.

TABLE 2
HYPOTHETICAL TOTAL REQUIREMENTS (DIRECT, INDIRECT AND INDUCED) FROM REGIONAL INDUSTRIES PER DOLLAR OF REGIONAL INDUSTRY OUTPUT
(Calculated from the Coefficients in Table 1)

Producing Sectors	Purchasing Sectors				
	Sector A	Sector B	Sector C	Sector D	Households
Sector A	1.29	.11	.15	.23	.18
Sector B	.38	1.13	.20	.21	.17
Sector C	.27	.15	1.27	.20	.28
Sector D	.36	.23	.33	1.50	.54
Households	.57	.48	.69	.57	1.35
Totals	2.87	2.10	2.64	2.71	2.52

Note: Each element represents the total input required (direct, indirect and induced) from the region's row sector per dollar's worth of output produced by the region's column sector.

TABLE 3
HYPOTHETICAL INCOME AND OUTPUT MULTIPLIERS
(Calculated from the Coefficients in Tables 1 and 2)

	Sector A	Sector B	Sector C	Sector D
Income Multiplier	2.85	1.60	1.73	2.28
Output Multiplier	2.31	1.62	1.94	2.14

Third, employment multipliers tend to be larger than income multipliers in low-wage sectors, and income multipliers tend to be larger than employment multipliers in high-wage sectors. The reason is simply that induced effects tend to be greater in high-wage sectors. This proposition makes it clear that it is inappropriate to use income multipliers for predicting employment effects, and vice versa.

When carefully estimated and properly applied, regional impact multipliers can be very useful tools of regional economic analysis. They, for example, have been used by the Bureau of Economic and Business Research to predict the impact of a decline in defense spending on the Utah economy, to estimate the impact of spending by out-of-state skiers on the Utah economy, to predict the economic impact of the proposed Superconducting Supercollider and to predict the economic impact of the Intermountain Power Project prior to its construction, to mention but a few.

Multiplier Misuses and Abuses

When casually estimated or misapplied, regional impact multipliers can not only be misleading, but their use for purposes of formulating public policy can be downright mischievous. Frequently, it seems that multipliers are used to justify projects on the basis of their public benefits that cannot be justified on the basis of their private benefits alone. It is quite possible that certain projects that are not viable without government subsidy are meritorious, but multiplier analysis is not the appropriate assessment tool in such situations. Income multipliers or employment multipliers can be used to estimate indirect and induced income and employment effects, respectively, but they cannot be used to predict the indirect and induced fiscal burdens of the project. What is indicated in such situations is cost-benefit analysis, which may incorporate the use of income and employment multipliers, but goes beyond the scope of simple income and employment multiplier analysis to come up with a bottom line net public benefit or net public burden for the project.

One of the most common multiplier abuses is to apply multipliers in situations where there is no change in export activity, or more generally, to situations in which there is no infusion of new external funding. The question is frequently raised, for example, as to the multiplier effect of establishing a new retail outlet of some sort in a region. The answer is that to the extent that spending of residents is merely diverted from old retail establishments to the new establishment, then there is no multiplier effect on the region as a whole. Of course, spending could be diverted from one locality to another within the region, in which case there would be two multiplier effects: a positive effect for the locality in which the new retail establishment is situated, but a negative effect on the locality or localities from which the spending is diverted. In neither case, though, would it be appropriate to use a multiplier for the whole region to estimate the effects in the different subregions.

Multipliers are frequently used to demonstrate the importance of a certain sector by some special interest group. For this purpose multipliers of apocryphal origin are popular. And for some reason the number 7 seems to be especially popular. The exercise would be completely legitimate, provided the correct multiplier were used, and provided it were applied only to basic industrial activity. Frequently, however, a dubiously large multiplier is applied to non-basic activity, resulting in a very exaggerated claim. It is interesting to observe that if all such claims were true, Utah would have perhaps a $300 billion economy in terms of gross state product, rather than the some $30 billion dollar economy that it actually has.

Output of the Trade Sectors

The Bureau of Economic Analysis treatment of the retail trade and wholesale trade sectors sometimes causes difficulties for novice multiplier users. The BEA (along with most other input-output modelers) defines the output of the trade sectors as the *trade margin*, by which is meant the difference between gross receipts and cost of goods sold. Consistent with this definition, the output of the other producing sectors is treated as if it were delivered directly from the producer to the consumer, bypassing the trade sectors. Trade is thus treated as only a conduit, just the same as transportation.

This results in the calculation of total requirements coefficients and impact multipliers that properly reflects the actual production requirements of the different producing sectors vis-a-vis each other, and avoids the aggregation error that would result from commingling the outputs of different producers that flow through the trade sectors. However, since output of the trade sector is defined as the trade margin and not gross sales, it is improper to use gross sales in multiplier calculations where the trade sectors are concerned.

For example, suppose that tourists are persuaded to spend an additional $100 million per year in the Utah retail trade sector. It might be tempting to take the retail trade sector direct earnings coefficient from Table 4 (.4968) and estimate direct earnings from the expanded tourist spending to be equal to $49.68 million and then to multiply that number by the Type II income multiplier (1.5659) to come up with an estimated personal income expansion of about $78 million per year.

This approach, however, is erroneous. A correct approach would require that only the trade and transportation margins involved in the additional $100 million of spending be used in the calculation of the economic impact.[5] A recent BEBR study on the impact of out-of-state skier spending on the Utah economy estimated that for the average spending pattern of visiting skiers the retail trade margin was about 30 percent, the associated average wholesale trade margin was about 10 percent, and the associated transportation margin was about 1 percent.[6]

Applying these numbers to the assumed $100 million expansion in tourist spending results in an expanded retail trade output of $30 million, an expanded wholesale trade output of $10 million and an expanded transportation output of $1 million. The direct earnings coefficients for these sectors from Table 4 are .4968, .3912, and .4608 (for motor freight transportation). Applying these coefficients to the expanded output estimates results in direct earnings estimates of $14.90 million for retail trade, $3.91 million for wholesale trade and $0.46 million for transportation, for a total direct earnings estimate of $19.27 million.

Again reading from Table 4, the income multipliers for retail trade, wholesale trade and transportation (motor freight) are 1.4719, 2.1738, and 2.2495, respectively. Applying these multipliers to the direct earnings estimates results in total earnings estimates of $21.93 million for retail trade, $8.50 million for wholesale trade and $1.03 million for transportation, for a total of about $31 million in personal income expansion, which is a far cry from the $78 million that was obtained using the naive multiplier approach outlined above.

Use of Multiplier Analysis in Small Areas

Extreme care should be exercised in using multipliers derived from input-output models for small geographical areas. The use of such multipliers for impact prediction purposes implicitly assumes that the trading patterns in existence at the time of the construction of the input-output model will be unaffected by the location of new industry in the area. This implies, inter alia, that the percent of industrial requirements imported will remain the same for every industry after the establishment of new industrial activity in the area.

At best, this assumption is not very satisfactory and, at worst, could lead to quite erroneous results, since the new activity itself could completely alter existing trading patterns in the area. As a general proposition, whenever a new industrial project will constitute a significant proportion of the economic base of a region, the use of multipliers derived from an existing input-output model to predict the impact of the new project is probably ill advised. What is required in such situations is a detailed industrial breakdown of the inputs that the new project will obtain from local sources.

Other Pitfalls in Using Multipliers

Implicit in the use of input-output derived multipliers for impact prediction purposes is the assumption that the technical coefficients defining the direct requirements matrix remain constant over the prediction period. But these coefficients can (and do) change for several different reasons: (1) new technology may be introduced resulting in a different relative mix of physical inputs, (2) relative factor prices may change, resulting in different dollar values of the input mix, or (3) trading patterns among regions may change, resulting in a different mix of imported inputs compared to inputs produced within the region. A significant occurrence of any of these possibilities may be enough to invalidate use of the input-output derived multipliers for prediction purposes.

The Utah primary copper sector is a good case in point. According to Table 4, the direct earnings requirement for producing a dollar's worth of refined copper is about 7¢ and the total earnings requirement is about 46¢. These numbers suggest that a $1 expansion in refined copper production would result in a direct earnings increase of 7¢ for copper refinery workers and a total earnings increase of 46¢ for all Utah workers (including, of course, copper miners). The employment multiplier of approximately 11 suggests that for every additional worker required in the production of refined copper a total of about 11 workers would be required to satisfy total output requirements from all sectors (including workers required in the copper mining sector).

However, it should be noted that these coefficients were derived on the basis of 1986 Utah average wage rates and 1977 national average technical coefficients. Recent technological innovations and changes in wage rates for copper workers, no doubt render these coefficients (and the multipliers upon which they are based) invalid. This means that any impact predictions based on them would be quite suspect. Incidentally, the high employment multiplier relative to the income multiplier for the refined copper sector can be explained largely by the relatively high wage rates that formerly prevailed in the Utah refined copper sector.

Another fairly common error in multiplier analysis involves the use of an employment multiplier as defined by the Bureau of Economic Analysis. The BEA defines the employment multiplier for sector i as the total number of jobs generated per million dollars of output delivered to final demand from sector i. Note that the employment multiplier under this definition is not a dimensionless number, and note particularly that the value of this multiplier is dependent upon the general level of wages and prices in the economy. This means that the published value for this type employment multiplier is valid only for the base year used in its calculation.

If the general level of prices has increased significantly since the base year, the use of the published value for the multiplier (without adjustment for price changes) will result in a significant overestimation of employment effects. For example, if the general level of prices has increased by 25 percent since the base year, then use of a BEA employment multiplier calculated as of the base year will result in employment effects being overstated by approximately 25 percent, also. Of course, this type of error is easily rectified by means of an appropriate price index adjustment, but this type of adjustment seldom seems to occur.

Finally, the output effects of a proposed project are frequently calculated by means of an output multiplier and then represented to be the benefit to a regional economy of the proposed project. However, the increase in the gross ouput of a regional economy is no more of a benefit than the increase in gross sales to a business firm. Neither gross output nor gross sales is a bottom line figure. Both completely ignore the costs of achieving the result, which may more than offset the benefits associated with the increased output or increased sales. Apparently the only reason for using the projected change in gross output is that this results in a much more impressive number, a number that could be a magnitude or several magnitudes of order greater than the change in regional personal income.

Notes

1. See Phyllis Deane and Jessica Kuper, *A Lexicon of Economics* (Routledge, 1988), pp. 275-278.

2. In John Maynard Keynes, *The General Theory of Employment Interest and Money*, (Harcourt, Brace and Company, 1936) p. 383.

3. The Roman numeral *II* in *Type II multiplier* apparently originated in an article by Werner Hirsch entitled "Interindustry Relations of a Metropolitan Area" that appeared in *The Review of Economic Statistics*, Vol. 41, No. 2 (November 1959), though Hirsch used the term *Model II* rather than *Type II*. The term *Model II* had evolved into *Type II* by the time William Miernyck had written *Elements of Input-Output Economics* (Random House, 1965).

4. See *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)* (U.S. Department of Commerce, Bureau of Economic Analysis, May 1986) and *Regional Input-Output*

(continued on page 17)

TABLE 1
UTAH EARNINGS REQUIREMENTS COEFFICIENTS AND TYPE II MULTIPLIERS AS CALCULATED FROM BEA RIMS II MODEL COEFFICIENTS

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
AGRICULTURE, FORESTRY, AND FISHERIES				
Dairy Farm Products	0.1743	0.3653	2.0958	1.5045
Poultry and Eggs	0.0892	0.2981	3.3424	2.0194
Meat Animals	0.0860	0.3199	3.7208	2.4080
Miscellaneous Livestock	0.1284	0.3277	2.5518	1.7312
Food Grains	0.2562	0.5059	1.9748	1.5135
Feed Grains	0.2439	0.4872	1.9974	1.4951
Grass Seeds	0.3221	0.5870	1.8224	1.4416
Fruits	0.4038	0.6773	1.6773	1.3514
Tree Nuts	0.4681	0.7321	1.5638	1.3030
Vegetables	0.4595	0.7145	1.5548	1.2921
Sugar Crops	0.3816	0.6249	1.6377	1.3376
Miscellaneous Crops	0.3191	0.5690	1.7833	1.3673
Forest Products	0.5192	0.7589	1.4617	1.2535
Greenhouse and Nursery Products	0.4229	0.7168	1.6950	1.3480
Commercial Fishing	0.4302	0.6450	1.4992	1.3323
Agricultural, Forestry, and Fishery Services	0.3367	0.6417	1.9058	1.4629
Landscape and Horticultural Services	0.5726	0.9052	1.5809	1.3081
MINING				
Iron and Ferroalloy Ores Mining	0.2177	0.4445	2.0419	3.1648
Copper Ore Mining	0.2971	0.6003	2.0204	3.0667
Nonferrous Metal Mining, Except Copper	0.2543	0.4908	1.9303	2.9850
Coal Mining	0.3047	0.5805	1.9052	3.3500
Crude Petroleum and Natural Gas	0.1013	0.2364	2.3331	3.6386
Stone Mining and Quarrying	0.2925	0.5267	1.8004	2.7867
Sand and Gravel Mining	0.3000	0.5558	1.8528	2.8639
Clay, Ceramic, and Refractory Minerals Mining	0.2562	0.4972	1.9408	3.0555
Nonmetallic Mineral Services and Misc. Mining	0.2753	0.5103	1.8533	2.9016
Chemical and Fertilizer Mineral Mining	0.2003	0.4331	2.1622	3.4483
CONSTRUCTION				
New Residential 1-Unit Structures, Nonfarm	0.3185	0.6841	2.1479	2.6552
New Residential 2-4 Unit Structures, Nonfarm	0.3363	0.7109	2.1139	2.6128
New Residential Garden Apartments	0.3304	0.7040	2.1308	2.6224
New Residential High-Rise Apartments	0.2706	0.6445	2.3817	2.9358
New Residential Alterations, Nonfarm	0.2621	0.6484	2.4739	3.1341
New Hotels and Motels	0.3228	0.7069	2.1899	2.6614
New Dormitories and Other Group Housing	0.3494	0.7378	2.1116	2.5490
New Industrial Buildings	0.3975	0.7780	1.9572	2.3409
New Office Buildings	0.3563	0.7335	2.0587	2.4881
New Warehouses	0.3893	0.7615	1.9561	2.3497
New Garages and Service Stations	0.3758	0.7557	2.0109	2.4286
New Stores and Restaurants	0.3493	0.7313	2.0936	2.5299
New Religious Buildings	0.3876	0.7845	2.0240	2.4551

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
New Educational Buildings	0.3749	0.7652	2.0411	2.4707
New Hospitals	0.3654	0.7461	2.0419	2.4643
New Residential Institutions	0.3868	0.7621	1.9703	2.3997
New Amusement and Recreation Buildings	0.3634	0.7629	2.0993	2.5578
Other New Nonfarm Buildings	0.3729	0.7604	2.0392	2.4859
New Telephone and Telegraph Facilities	0.4416	0.7489	1.6959	2.0200
New Railroads	0.4323	0.8002	1.8510	2.1668
New Electric Utility Facilities	0.4157	0.8299	1.9964	2.4090
New Gas Utility Facilities	0.3723	0.8403	2.2571	2.7689
New Petroleum Pipelines	0.3756	0.8396	2.2354	2.7250
New Water Supply Facilities	0.3476	0.8226	2.3665	2.8367
New Sewer System Facilities	0.3570	0.8280	2.3193	2.8089
New Local Transit Facilities	0.3267	0.7706	2.3587	2.8707
New Highways and Streets	0.3193	0.7544	2.3627	2.8795
New Farm Housing Units and Alterations	0.2711	0.6647	2.4519	3.1004
New Farm Service Facilities	0.3965	0.7540	1.9016	2.3020
New Oil and Gas Well Drilling	0.3342	0.7436	2.2250	2.5878
New Oil, Gas, and Mineral Exploration	0.6018	0.8945	1.4864	1.7381
New Access Structures for Mineral Development	0.4387	0.7512	1.7123	1.9928
New Military Facilities	0.4459	0.8269	1.8545	2.2174
New Dams and Reservoirs	0.4075	0.8692	2.1330	2.6470
Other New Conservation and Development Facilities	0.3882	0.8648	2.2277	2.7780
Other New Nonbuilding Facilities	0.3501	0.7755	2.2151	2.7259
Residential Maintenance and Repair	0.3673	0.7042	1.9175	2.3392
Other Nonfarm Buildings Maintenance and Repair	0.4719	0.8105	1.7176	2.0497
Farm Residence Maintenance and Repair	0.3533	0.6831	1.9332	2.3268
Farm Service Facility Maintenance and Repair	0.3334	0.6825	2.0469	2.4327
Telephone and Telegraph Maintenance and Repair	0.7532	1.0906	1.4479	1.7256
Railroad Maintenance and Repair	0.5614	0.8990	1.6013	1.8573
Electric Utility Maintenance and Repair	0.5061	0.8768	1.7323	2.1708
Gas Utility Maintenance and Repair	0.3826	0.7742	2.0234	2.3221
Petroleum Pipeline Maintenance and Repair	0.4026	0.7960	1.9772	2.2786
Water Supply Maintenance and Repair	0.4933	0.8729	1.7696	2.0400
Sewer Maintenance and Repair	0.6281	0.9992	1.5908	1.8482
Local Transit Maintenance and Repair	0.3666	0.7132	1.9452	2.2807
Military Facility Maintenance and Repair	0.3864	0.7444	1.9264	2.2392
Conservation and Development Maint. and Repair	0.3726	0.7649	2.0531	2.3708
Highway and Street Maintenance and Repair	0.5656	0.9280	1.6406	1.9001
Oil and Gas Well Maintenance and Repair	0.4565	0.7194	1.5759	1.8326
Other Nonbuilding Facility Maintenance and Repair	0.4020	0.7596	1.8895	2.1991
MANUFACTURING				
Guided Missiles and Space Vehicles	0.3509	0.6021	1.7160	2.6325
Small Arms	0.3773	0.6664	1.7662	2.1701
Small Arms Ammunition	0.3446	0.6074	1.7628	2.1687
Other Ordnance and Accessories	0.5602	0.8762	1.5640	1.9111
Meat Packing Plants	0.0862	0.4127	4.7858	2.6482

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
Sausages and Other Prepared Meats	0.1157	0.4866	4.2055	5.3482
Poultry Dressing Plants	0.1114	0.3678	3.3018	4.4325
Poultry and Egg Processing	0.1104	0.3839	3.4759	4.3639
Cheese, Natural and Processed	0.0669	0.4250	6.3571	9.4215
Condensed and Evaporated Milk	0.0836	0.3326	3.9771	5.9681
Ice Cream and Frozen Desserts	0.1730	0.4586	2.6513	3.2550
Fluid Milk	0.1141	0.4139	3.6268	5.4337
Canned Specialties	0.1242	0.3313	2.6664	3.1811
Canned Fruits and Vegetables	0.1593	0.3941	2.4745	3.0196
Dehydrated Food Products	0.1530	0.4157	2.7178	3.2878
Pickles, Sauces, and Salad Dressings	0.1022	0.2847	2.7845	3.2172
Fresh or Frozen Packaged Fish	0.1189	0.3429	2.8831	3.2934
Frozen Specialties	0.1595	0.4200	2.6328	3.0340
Flour and Other Grain Mill Products	0.0864	0.3930	4.5500	6.6503
Prepared Feeds, n.e.c.	0.0620	0.2532	4.0866	4.6902
Bread, Cake, and Related Products	0.3002	0.6093	2.0298	2.3273
Cookies and Crackers	0.2372	0.4747	2.0016	2.2687
Sugar	0.1162	0.4042	3.4781	4.4023
Confectionery Products	0.1587	0.4019	2.5320	2.9026
Bottled and Canned Soft Drinks	0.2008	0.3949	1.9666	2.2022
Flavoring Extracts and Sirups, n.e.c.	0.1367	0.3116	2.2786	2.5488
Animal and Marine Fats and Oils	0.1181	0.3313	2.8048	3.2221
Manufactured Ice	0.3825	0.7003	1.8308	2.0354
Macaroni and Spaghetti	0.1545	0.4466	2.8899	3.4164
Food Preparations, n.e.c.	0.1451	0.3650	2.5160	2.8897
Broadwoven Fabric Mills and Fabric Finishing	0.1961	0.3547	1.8085	1.4933
Floor Coverings	0.1348	0.2607	1.9344	1.5468
Felt Goods, n.e.c.	0.3028	0.5229	1.7266	1.4533
Knit Outerwear Mills	0.2902	0.4614	1.5899	1.3913
Apparel Made from Purchased Materials	0.2888	0.4938	1.7099	1.5355
Curtains and Draperies	0.2656	0.4698	1.7689	1.5643
Housefurnishings, n.e.c.	0.1855	0.3458	1.8641	1.5959
Textile Bags	0.2501	0.4134	1.6526	1.4640
Canvas and Related Products	0.2893	0.4689	1.6209	1.4605
Automotive and Apparel Trimmings	0.2858	0.4589	1.6058	1.4400
Fabricated Textile Products, n.e.c.	0.2605	0.4249	1.6309	1.4641
Logging Camps and Logging Contractors	0.1784	0.2981	1.6710	1.7173
Sawmills and Planing Mills, General	0.2332	0.4005	1.7175	1.7284
Special Product Sawmills, n.e.c.	0.2964	0.5085	1.7153	1.7337
Millwork	0.2249	0.4547	2.0220	1.9955
Wood Kitchen Cabinets	0.3457	0.5757	1.6652	1.6831
Veneer and Plywood	0.2086	0.3774	1.8088	1.7949
Structural Wood Members, n.e.c.	0.2188	0.4559	2.0838	2.0516
Prefabricated Wood Buildings	0.2138	0.4675	2.1862	2.1307
Wood Preserving	0.1649	0.3831	2.3234	2.2346
Wood Pallets and Skids	0.2697	0.5183	1.9215	1.9207
Wood Products, n.e.c.	0.2828	0.5069	1.7925	1.7945

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
Wood Containers	0.2915	0.5504	1.8880	1.8981
Wood Household Furniture	0.3195	0.5759	1.8023	1.8122
Household Furniture, n.e.c.	0.2957	0.5313	1.7965	1.7889
Wood TV and Radio Cabinets	0.3334	0.6057	1.8167	1.8310
Upholstered Household Furniture	0.2919	0.5148	1.7633	1.7783
Metal Household Furniture	0.2557	0.5382	2.1045	2.0346
Mattresses and Bedsprings	0.2217	0.4683	2.1119	2.1075
Wood Office Furniture	0.2981	0.5580	1.8716	1.8831
Public Building Furniture	0.3109	0.6119	1.9680	1.9395
Wood Partitions and Fixtures	0.3388	0.6159	1.8177	1.8270
Metal Partitions and Fixtures	0.2839	0.6035	2.1261	1.9990
Drapery Hardware and Blinds and Shades	0.2544	0.4872	1.9151	1.8723
Furniture and Fixtures, n.e.c.	0.3127	0.5555	1.7766	1.7503
Envelopes	0.3240	0.5282	1.6305	2.0762
Sanitary Paper Products	0.1347	0.2885	2.1411	2.8022
Building Paper and Board Mills	0.2666	0.5514	2.0686	2.6455
Bags, Except Textile	0.2000	0.3865	1.9323	2.5146
Die-Cut Paper and Board	0.1969	0.3409	1.7309	2.2107
Stationery Products	0.2573	0.4512	1.7536	2.2636
Paperboard Containers and Boxes	0.2122	0.3719	1.7525	2.2214
Newspapers	0.3675	0.6592	1.7936	1.9009
Periodicals	0.2267	0.5693	2.5117	2.7518
Book Publishing	0.2410	0.5537	2.2974	2.4325
Book Printing	0.3775	0.6277	1.6630	1.7361
Miscellaneous Publishing	0.3701	0.6331	1.7104	1.8086
Commercial Printing	0.3252	0.5526	1.6994	1.7797
Lithographic Platemaking and Services	0.4493	0.7194	1.6011	1.6807
Manifold Business Forms	0.2341	0.4244	1.8128	1.8913
Blankbooks and Looseleaf Binders	0.3515	0.5854	1.6655	1.7487
Greeting Card Publishing	0.2651	0.5098	1.9233	2.0091
Engraving and Plate Printing	0.4292	0.6735	1.5693	1.6630
Bookbinding and Related Work	0.4953	0.7691	1.5527	1.6573
Typesetting	0.5238	0.7706	1.4710	1.5667
Photoengraving	0.4414	0.7490	1.6967	1.7996
Industrial Inorganic and Organic Chemicals	0.1500	0.4074	2.7156	4.2911
Nitrogenous and Phosphatic Fertilizers	0.0879	0.3363	3.8249	6.1065
Fertilizers, Mixing Only	0.0891	0.3798	4.2628	7.1590
Agricultural Chemicals, n.e.c.	0.1080	0.3384	3.1326	5.2040
Adhesives and Sealants	0.1328	0.3555	2.6779	4.2499
Explosives	0.2789	0.5706	2.0460	3.1186
Printing Ink	0.1523	0.3794	2.4910	3.8476
Chemical Preparations, n.e.c.	0.1302	0.4059	3.1171	5.0464
Plastics Materials and Resins	0.1550	0.4116	2.6551	4.1886
Synthetic Rubber	0.1471	0.3862	2.6247	3.9970
Cellulosic Man-Made Fibers	0.2055	0.4803	2.3369	3.5248
Drugs	0.2151	0.4799	2.2315	3.7395

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
Soap and Other Detergents	0.1152	0.3602	3.1270	5.2148
Polishes and Sanitation Goods	0.1098	0.3385	3.0821	5.3767
Surface Active Agents	0.2103	0.4840	2.3013	3.5331
Toilet Preparations	0.1238	0.3585	2.8968	5.0463
Paints and Allied Products	0.1479	0.3832	2.5914	4.1206
Petroleum Refining	0.0359	0.1787	4.9763	8.4444
Products of Petroleum and Coal, n.e.c.	0.0420	0.2074	4.9364	8.2405
Paving Mixtures and Blocks	0.0949	0.3863	4.0725	6.4840
Asphalt Felts and Coatings	0.1031	0.3831	3.7164	6.0057
Tires and Inner Tubes	0.2352	0.4462	1.8968	2.1325
Fabricated Rubber Products, n.e.c.	0.3237	0.5918	1.8284	2.0509
Miscellaneous Plastics Products	0.2275	0.4226	1.8576	2.0922
Rubber and Plastics Hose and Belting	0.3304	0.5611	1.6984	1.9141
Leather Tanning and Finishing	0.2117	0.5160	2.4372	3.0370
Shoes, Except Rubber	0.3227	0.5438	1.6850	1.9278
Luggage	0.2880	0.5283	1.8343	2.1330
Women's Handbags and Purses	0.3007	0.4991	1.6598	1.9175
Personal Leather Goods	0.2741	0.4996	1.8228	2.1368
Leather Goods, n.e.c.	0.2510	0.4642	1.8492	2.1285
Glass and Glass Products, Except Containers	0.3381	0.6116	1.8091	2.2779
Cement, Hydraulic	0.1924	0.5060	2.6296	3.2764
Brick and Structural Clay Tile	0.2961	0.5466	1.8457	2.3056
Ceramic Wall and Floor Tile	0.3934	0.6881	1.7493	2.1857
Clay Refractories	0.2967	0.6552	2.2085	2.7449
Structural Clay Products, n.e.c.	0.3466	0.6688	1.9296	2.4161
Pottery Products, n.e.c.	0.4100	0.7567	1.8457	2.3240
Concrete Block and Brick	0.2555	0.6704	2.6241	3.3010
Concrete Products, n.e.c.	0.3040	0.6609	2.1743	2.7360
Ready-Mixed Concrete	0.2102	0.6335	3.0141	3.7849
Lime	0.1929	0.5485	2.8436	3.4655
Gypsum Products	0.1734	0.4440	2.5608	3.1955
Cutstone and Stone Products	0.3507	0.6565	1.8721	2.3481
Abrasive Products	0.2351	0.4436	1.8867	2.4053
Asbestos Products	0.2330	0.5307	2.2772	2.8635
Gaskets, Packing and Sealing Devices	0.3369	0.5964	1.7700	2.2272
Minerals, Ground or Treated	0.1871	0.5445	2.9096	3.6979
Mineral Wool	0.2016	0.4107	2.0376	2.5585
Nonmetallic Mineral Products, n.e.c.	0.2472	0.5326	2.1543	2.7544
Blast Furnaces and Steel Mills	0.2451	0.5790	2.3619	3.8929
Cold Finishing of Steel Shapes	0.1621	0.5087	3.1375	5.3426
Steel Pipe and Tubes	0.1974	0.5419	2.7449	4.5877
Iron and Steel Foundries	0.3304	0.6300	1.9069	3.1362
Metal Heat Treating	0.3043	0.5612	1.8445	3.0144
Primary Metal Products, n.e.c.	0.1624	0.3627	2.2335	3.8132
Primary Copper	0.0713	0.4587	6.4363	11.0427
Primary Nonferrous Metals, n.e.c.	0.1643	0.4543	2.7657	4.6380
Secondary Nonferrous Metals	0.0910	0.3771	4.1446	7.7693

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
Copper Rolling and Drawing	0.1181	0.4341	3.6759	6.3811
Nonferrous Rolling and Drawing, n.e.c.	0.1167	0.3386	2.9014	5.0499
Nonferrous Wire Drawing and Insulating	0.1470	0.3384	2.3020	3.9081
Aluminum Castings	0.2973	0.5100	1.7155	2.8662
Brass, Bronze, and Copper Castings	0.2436	0.5711	2.3442	3.9577
Metal Cans	0.1775	0.4466	2.5155	2.9543
Metal Sanitary Ware	0.2835	0.5915	2.0868	2.5421
Plumbing Fixture Fittings and Trim	0.2238	0.4473	1.9983	2.4341
Heating Equipment, Except Electric	0.2559	0.5415	2.1162	2.5605
Fabricated Structural Metal	0.2594	0.5953	2.2949	2.7193
Metal Doors, Sash, and Trim	0.2304	0.4381	1.9015	2.3268
Fabricated Plate Work (Boiler Shops)	0.2794	0.6054	2.1665	2.6027
Sheet Metal Work	0.2330	0.5184	2.2250	2.6650
Architectural Metal Work	0.3004	0.5963	1.9852	2.3790
Prefabricated Metal Buildings	0.1879	0.5230	2.7840	3.2519
Miscellaneous Metal Work	0.1905	0.5615	2.9474	3.4027
Screw Machine Products and Bolts, Nuts, and Rivets	0.3046	0.6286	2.0635	2.4624
Metal Stampings, n.e.c.	0.2869	0.5688	1.9826	2.3765
Hand and Edge Tools, n.e.c.	0.3055	0.5698	1.8650	2.2522
Hardware, n.e.c.	0.3065	0.5623	1.8344	2.2133
Plating and Polishing	0.3543	0.6286	1.7744	2.1639
Metal Coating and Allied Services	0.2496	0.5355	2.1458	2.5567
Miscellaneous Fabricated Wire Products	0.2857	0.5866	2.0529	2.4406
Steel Springs, Except Wire	0.2619	0.5973	2.2810	2.6511
Pipe, Valves, and Pipe Fittings	0.2434	0.5334	2.1911	2.6362
Fabricated Metal Products, n.e.c.	0.2658	0.5275	1.9843	2.3911
Turbines and Turbine Generator Sets	0.2941	0.5788	1.9680	2.6120
Internal Combustion Engines, n.e.c.	0.2345	0.4723	2.0138	2.6880
Farm Machinery and Equipment	0.2518	0.4993	1.9830	2.6340
Construction Machinery and Equipment	0.2641	0.5383	2.0386	2.7105
Mining Machinery, Except Oil Field	0.2531	0.5366	2.1203	2.8293
Oil Field Machinery	0.2614	0.5401	2.0663	2.7748
Conveyors and Conveying Equipment	0.2866	0.5619	1.9608	2.6295
Hoists, Cranes, and Monorails	0.2859	0.5383	1.8826	2.5100
Industrial Trucks and Tractors	0.2640	0.5655	2.1421	2.8786
Machine Tools, Metal Cutting Types	0.3648	0.6372	1.7468	2.3381
Machine Tools, Metal Forming Types	0.3482	0.6279	1.8032	2.3920
Special Dies, Tools and Accessories	0.4166	0.6842	1.6422	2.1736
Power Driven Hand Tools	0.2385	0.4471	1.8747	2.5491
Metalworking Machinery, n.e.c.	0.3180	0.5569	1.7511	2.3390
Food Products Machinery	0.3287	0.6114	1.8602	2.4944
Textile Machinery	0.3713	0.7049	1.8982	2.5830
Woodworking Machinery	0.2516	0.5122	2.0360	2.7564
Printing Trades Machinery	0.3144	0.5798	1.8441	2.4920
Special Industry Machinery, n.e.c.	0.3283	0.6123	1.8652	2.4980
Pumps and Compressors	0.2655	0.5409	2.0373	2.7743
Blowers and Fans	0.2819	0.5448	1.9329	2.6097

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
Industrial Patterns	0.4927	0.7772	1.5773	2.0989
Power Transmission Equipment	0.3390	0.6132	1.8087	2.3980
Industrial Furnaces and Ovens	0.3074	0.5806	1.8887	2.5496
General Industrial Machinery, n.e.c.	0.3131	0.5876	1.8764	2.5539
Machinery, Except Electrical, n.e.c.	0.4075	0.7368	1.8081	2.4485
Electronic Computing Equipment	0.2761	0.6613	2.3948	3.3717
Scales and Balances	0.3063	0.6011	1.9623	2.7285
Commercial Laundry Equipment	0.2789	0.5864	2.1024	2.8741
Refrigeration and Heating Equipment	0.2303	0.4617	2.0051	2.7281
Service Industry Machines, n.e.c.	0.2654	0.5555	2.0930	2.8602
Instruments to Measure Electricity	0.3648	0.6278	1.7209	2.0681
Transformers	0.3035	0.5917	1.9496	2.3212
Switchgear and Switchboard Apparatus	0.3343	0.5845	1.7484	2.1086
Motors and Generators	0.3335	0.6060	1.8169	2.1648
Industrial Controls	0.3550	0.6181	1.7411	2.0996
Electric Housewares and Fans	0.2169	0.4369	2.0147	2.4451
Household Appliances, n.e.c.	0.1928	0.4411	2.2881	2.6988
Lighting Fixtures and Equipment	0.2491	0.5035	2.0214	2.4435
Wiring Devices	0.2829	0.5621	1.9871	2.3766
Radio and TV Receiving Sets	0.2491	0.5704	2.2895	2.8819
Phonograph Records and Tapes	0.2827	0.5902	2.0877	2.6341
Telephone and Telegraph Apparatus	0.3201	0.6263	1.9564	2.3975
Radio and TV Communication Equipment	0.4336	0.7935	1.8300	2.2205
Electron Tubes	0.3710	0.7013	1.8903	2.2948
Semiconductors and Related Devices	0.3644	0.7013	1.9246	2.3463
Other Electronic Components	0.3284	0.6623	2.0165	2.4595
Storage Batteries	0.2245	0.4270	1.9021	2.2976
X-Ray Apparatus and Tubes	0.3454	0.6437	1.8635	2.2717
Engine Electrical Equipment	0.3406	0.5936	1.7430	2.0829
Electrical Equipment and Supplies, n.e.c.	0.3252	0.6294	1.9354	2.3493
Truck and Bus Bodies	0.2439	0.4707	1.9301	2.4166
Truck Trailers	0.1831	0.3930	2.1460	2.6551
Motor Vehicles and Car Bodies	0.1165	0.2505	2.1509	2.7732
Motor Vehicles Parts and Accessories	0.2652	0.5403	2.0373	2.4830
Aircraft and Missile Engines and Engine Parts	0.3552	0.6923	1.9491	3.0810
Aircraft and Missile Equipment, n.e.c.	0.4087	0.7414	1.8142	2.8391
Boat Building and Repairing	0.3665	0.6095	1.6632	2.5177
Railroad Equipment	0.2458	0.5224	2.1253	3.2161
Motorcycles, Bicycles, and Parts	0.1831	0.4161	2.2724	3.6569
Travel Trailers and Campers	0.1963	0.4407	2.2446	3.6517
Mobile Homes	0.1895	0.4450	2.3484	3.8551
Transportation Equipment, n.e.c.	0.2026	0.5115	2.5250	3.9711
Engineering and Scientific Instruments	0.3522	0.6442	1.8293	2.1878
Mechanical Measuring Devices	0.3907	0.6755	1.7288	2.0549
Environmental Controls	0.3798	0.6525	1.7182	2.0427
Surgical and Medical Instruments	0.3202	0.5685	1.7753	2.1223
Surgical Appliances and Supplies	0.2872	0.5286	1.8408	2.2311

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
Dental Equipment and Supplies	0.2963	0.5733	1.9346	2.3212
Watches, Clocks, and Parts	0.2447	0.4711	1.9249	2.3166
Optical Instruments and Lenses	0.3391	0.6166	1.8183	2.2049
Ophthalmic Goods	0.3592	0.6181	1.7205	2.0709
Photographic Equipment and Supplies	0.2494	0.4790	1.9204	2.3102
Jewelry, Precious Metal	0.2261	0.4743	2.0980	1.9359
Silverware and Plated Ware	0.3232	0.5654	1.7496	1.6347
Costume Jewelry	0.3163	0.5660	1.7896	1.6898
Musical Instruments	0.3301	0.6439	1.9507	1.8099
Games, Toys, and Children's Vehicles	0.2363	0.4822	2.0408	1.9042
Dolls	0.2204	0.4304	1.9532	1.8400
Sporting and Athletic Goods, n.e.c.	0.2537	0.5206	2.0517	1.9056
Pens and Mechanical Pencils	0.2407	0.4905	2.0375	1.8994
Marking Devices	0.3615	0.7125	1.9708	1.8267
Artificial Trees and Flowers	0.2473	0.5097	2.0610	1.9494
Needles, Pins, and Fasteners	0.2932	0.4982	1.6992	1.6157
Brooms and Brushes	0.2964	0.5547	1.8712	1.7653
Burial Caskets and Vaults	0.2854	0.5895	2.0658	1.8804
Signs and Advertising Displays	0.3529	0.6177	1.7505	1.6616
TRANSPORTATION, COMMUNICATIONS, AND UTILITIES				
Railroads and Related Services	0.4516	0.8647	1.9148	2.4477
Local, Suburban, and Interurban Highway Transit	0.4895	0.7790	1.5914	2.0385
Motor Freight Transportation and Warehousing	0.4608	0.8118	1.7616	2.2495
Water Transportation	0.2002	0.3648	1.8221	2.4135
Air Transportation	0.3213	0.5735	1.7849	2.3503
Pipe Lines, Except Natural Gas	0.1420	0.3302	2.3246	3.0653
Freight Forwarders and Other Transportation Services	0.4565	0.7972	1.7465	2.3287
Arrangement of Passenger Transportation	0.5840	0.9024	1.5452	2.0104
Communications, Except Radio and TV	0.2665	0.4499	1.6882	2.4053
Radio and TV Broadcasting	0.2486	0.5333	2.1452	3.9053
Electric Utilities	0.1061	0.3542	3.3388	5.4601
Gas Production and Distribution Utilities	0.0741	0.2298	3.0994	4.9804
Water Supply and Sewerage Systems	0.1151	0.4581	3.9793	7.1397
Sanitary Services, Steam Supply, and Irrigation	0.2058	0.4510	2.1911	3.5837
WHOLESALE AND RETAIL TRADE				
Wholesale Trade	0.3912	0.6698	1.7122	2.1738
Retail Trade	0.4968	0.7779	1.5659	1.4719
FINANCE, INSURANCE, AND REAL ESTATE				
Banking	0.3522	0.6364	1.8072	2.1334
Credit Agencies Other Than Banks	0.1018	0.3767	3.7019	4.7541
Security and Commodity Brokers	0.5285	0.9000	1.7029	1.9947
Insurance Carriers	0.3299	0.6600	2.0008	2.2532
Insurance Agents, Brokers, and Services	0.7009	1.0327	1.4734	1.6448
Real Estate	0.0644	0.1779	2.7613	1.5917

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
SERVICES				
Hotels and Lodging Places	0.3569	0.6433	1.8027	1.4761
Laundry, Cleaning and Shoe Repair	0.4706	0.7722	1.6409	1.3908
Funeral Service and Crematories	0.3260	0.6795	2.0843	1.6023
Photographic Studios and Misc. Personal Services	0.4714	0.7369	1.5631	1.3322
Electrical Repair Shops	0.3716	0.6187	1.6651	1.3607
Watch, Clock, Jewelry, and Furniture Repair	0.4102	0.6285	1.5321	1.3061
Beauty and Barber Shops	0.5967	0.8557	1.4339	1.2686
Miscellaneous Repair Shops	0.3485	0.5496	1.5772	1.5663
Services to Dwellings and Other Buildings	0.5470	0.8016	1.4655	1.4836
Personnel Supply Services	0.6655	0.9734	1.4626	1.4983
Computer and Data Processing Services	0.4672	0.7426	1.5896	1.6041
Management, Consulting, and Research Services	0.4737	0.7810	1.6489	1.6740
Detective and Protective Services	0.6020	0.9216	1.5308	1.5748
Equipment Rental and Leasing Services	0.3218	0.5170	1.6066	1.6489
Photo Labs, Photocopy, and Commercial Photography	0.3580	0.5862	1.6376	1.6535
Other Business Services	0.4190	0.7173	1.7118	1.6768
Advertising	0.4260	0.6644	1.5597	1.6011
Legal Services	0.7243	1.0690	1.4758	1.5107
Engineering and Architectural Services	0.5482	0.9272	1.6912	1.7273
Accounting, Bookkeeping, and Miscellaneous Services	0.5819	0.9066	1.5581	1.6056
Eating and Drinking Places	0.3124	0.6019	1.9264	1.4179
Automotive Rental and Leasing, Without Drivers	0.2358	0.4500	1.9082	1.8855
Automotive Repair Shops and Services	0.3073	0.5660	1.8416	1.8245
Automobile Parking and Car Washes	0.2709	0.4863	1.7954	1.8283
Motion Pictures	0.2537	0.6179	2.4352	2.0241
Theatrical Producers, Bands, and Entertainers	0.3343	0.6863	2.0527	1.6640
Bowling Alleys, Billiard and Pool Halls	0.2888	0.6263	2.1684	1.7054
Commercial Sports, Except Racing	0.4620	0.8523	1.8446	1.5908
Racing (Including Track Operations)	0.2025	0.3481	1.7192	1.4205
Membership Sports and Recreation Clubs	0.2697	0.6424	2.3821	1.8009
Other Amusement and Recreation Services	0.3504	0.6197	1.7688	1.4649
Doctors and Dentists	0.6411	0.9808	1.5300	1.7222
Hospitals	0.5183	0.8348	1.6106	1.8262
Nursing and Personal Care Facilities	0.5889	0.9006	1.5292	1.7400
Other Medical and Health Services	0.5642	0.8620	1.5279	1.7103
Elementary and Secondary Schools	0.4142	0.7671	1.8522	1.8798
Colleges, Universities, and Professional Schools	0.5518	0.8974	1.6263	1.6667
Libraries, Vocational Schools, and Ed. Services, n.e.c.	0.5220	0.8683	1.6635	1.6958
Business and Professional Membership Organizations	0.3905	0.7983	2.0443	2.0560
Labor, Civic, Social, and Fraternal Organizations	0.4166	0.8125	1.9502	2.0102
Religious Organizations	0.5740	0.9287	1.6181	1.6487
Other Membership Organizations	0.4612	0.8546	1.8529	1.8712
Job Training and Related Services	0.5884	0.9252	1.5725	1.5969
Child Day Care Services	0.5620	0.8111	1.4431	1.4787
Residential Care	0.4619	0.8246	1.7851	1.8376
Social Services, n.e.c.	0.4943	0.9055	1.8319	1.8430

TABLE 4 (continued)

Input-Output Sector	Direct Earnings Coefficient	Total Earnings Coefficient	Type II Income Multiplier	Type II Employment Multiplier
GOVERNMENT ENTERPRISES				
U.S. Postal Service	0.7258	1.1095	1.5286	1.9115
Other Federal Government Enterprises	0.2703	0.5288	1.9566	2.0022
Local Government Passenger Transit	0.3051	0.5942	1.9476	2.5581
State and Local Electric Utilities	0.1410	0.4137	2.9343	4.7471

Source: Calculated by BEBR from the coefficients of a RIMS II 531-sector model of the Utah economy developed by the U.S. Department of Commerce, Bureau of of Economic Analysis.

(continued from page 7)

Modeling System (RIMS II): Estimation, Evaluation, and Application of a Disaggregated Regional Impact Model (U.S. Department of Commerce, Bureau of Economic Analysis, 1981). Definitions of the BEA input-output industrial sectors in terms of their component Standard Industrial Classification codes may be found in Appendix B of "Input-Output Structure of the U.S. Economy, 1977," *Survey of Current Business*, Vol. 64, No. 5 (May 1984), pp. 80-84.

5. The use of margins in calculating the impact of changes in trade sector gross sales is discussed in *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)* on pp. 16-19.

6. See Boyd L. Fjeldsted and Frank C. Hachman, "Results of the 1989-90 Utah Ski Industry Study," *Utah Economic and Business Review*, Vol. 50, No. 7 (July 1990). Trade and transportation margin percentages may be estimated from a table issued by the Interindustry Economics Division of the Bureau of Economic Analysis entitled "Table B.--Detailed Input-Output Commodity Composition of Personal Consumption Expenditures, 1977." This table is an expanded version of "Table B.--Input-Output Commodity Composition of Personal Consumption Expenditures, in Producers' and Purchasers' Prices, 1977" that appeared on pages 46-48 of "Input-Output Structure of the U.S. Economy, 1977," *Survey of Current Business*, Vol. 64, No. 5 (May 1984).

CORRECTION

The UEBR, Vol. 50, No. 7, July 1990, contained an error in Table 1 and should be corrected to read as follows:

Expenditure Category	Total Jobs Coefficient	Total Jobs Generated
Total Wholesale Requirement	3.04E-05	161
Totals		11,649

Utah Business Statistics

UTAH DATA	Jul. 1989	Jul. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	22,328	NA	NA	NA	21,513	NA
New Corporations (no.)	416	171a	-58.9%	473	452	4.8%
New Car, Truck, and Motor Home Sales (no.)	5,494	NA	NA	NA	5,095	NA
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	72.50	74.50	2.8%	74.73	71.02	5.2%
Lambs (cwt)	63.00	48.80	-22.5%	53.90	61.63	-12.5%
Milk Wholesale (cwt)	11.60	13.20	13.8%	13.49	11.97	12.7%
Alfalfa Hay, Baled (per ton)	87.00	86.00	-1.1%	85.42	81.42	4.9%
Cattle Slaughtered (live weight) (thous. of lbs.)	46,874	48,187	2.8%	47,765	47,451	0.7%
Construction						
Total Construction (thous. of dol.) 1	74,631.3	134,941.3	80.8%	86,564.6	68,545.5	26.3%
Residential	44,545.6	52,792.4	18.5%	41,995.3	33,972.6	23.6%
Nonresidential	15,850.0	71,562.0	351.5%	28,701.7	21,833.5	31.5%
Additions, Alterations, and Conversions	14,235.7	10,586.9	-25.6%	15,867.6	12,739.3	24.6%
Total Permit Construction (thous. of dol.) 2	84,658.4	149,842.0	77.0%	94,708.8	75,272.2	25.8%
Residential	44,826.9	56,796.5	26.7%	44,499.9	35,248.7	26.2%
Nonresidential	24,108.6	81,969.8	240.0%	35,509.8	26,258.9	35.2%
Additions, Alterations, and Repairs	15,722.9	11,075.7	-29.6%	14,699.0	13,764.6	6.8%
New Dwelling Units (no.)	553	623	12.7%	541	458	18.1%
Employment						
Civilian Labor Force (thous.)	797.9	799.2	0.2%	796.3	776.1	2.6%
Total Employed Persons	762.3	763.8	0.2%	761.8	739.4	3.0%
Unemployed Persons	35.6	35.4	-0.6%	34.4	36.4	-5.3%
Percent Total Labor Force	4.5	4.4	-2.2%	4.3	4.7	-8.8%
Employees on Nonagricultural Payrolls (thous. of jobs)	685.3	719.2	4.9%	709.7	677.8	4.7%
Manufacturing	103.5	106.6	3.0%	104.5	101.8	2.7%
Mining	8.2	8.7	6.1%	8.5	7.9	8.0%
Contract Construction	28.1	29.0	3.2%	26.8	25.6	4.5%
Transportation, Communication, and Utilities	40.9	43.2	5.6%	42.3	40.4	4.6%
Wholesale Trade	39.2	40.8	4.1%	39.6	37.4	5.8%
Retail Trade	127.4	136.3	7.0%	132.7	124.7	6.4%
Finance, Insurance, and Real Estate	33.5	34.4	2.7%	33.7	33.2	1.3%
Services 3	166.9	178.9	7.2%	173.7	162.3	7.0%
Federal Government	40.5	40.2	-0.7%	40.3	39.8	1.3%
State Government 4	38.4	40.3	4.9%	41.3	39.4	4.9%
Local Government 4	58.8	60.8	3.4%	66.5	65.5	1.6%
Average Weekly Hours						
Manufacturing	39.5	39.7	0.5%	40.0	40.2	-0.6%
Mining	41.6	45.0	8.2%	42.2	40.5	4.2%
Wholesale Trade	38.9	38.8	-0.3%	36.5	37.5	-2.7%
Retail Trade	28.0	28.0	0.0%	26.9	27.4	-1.6%
Amount of Unemployment Compensation (thous. of dol.)	3,745.0	4,139.7	10.5%	4,960.3	5,272.8	-5.9%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,189.2	1,795.5	-18.0%	1,981.4	2,288.6	-13.4%
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	219,161.2	NA	NA	NA	162,061.3	NA
Sales and Use Tax	100,450.6	NA	NA	NA	63,241.8	NA
Motor Fuel Tax	12,027.7	NA	NA	NA	11,789.3	NA
Individual Income Tax	59,300.3	NA	NA	NA	54,113.9	NA
Corporation Franchise Tax	5,898.3	NA	NA	NA	7,597.7	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,748.1	3,850.0	2.7%	3,565.9	4,302.8	-17.1%
Crude Oil (thous. of bbls.)	2,420.3	2,283.9	-5.6%	2,334.0	2,476.6	-5.8%
Natural Gas (mil. of cu. ft.)	23,794.9	27,405.8	15.2%	25,065.3	22,684.6	10.5%
Coal (thous. short tons)	1,370.0	1,610.0	17.5%	1,867.3	1,565.0	19.3%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	1,143,496	1,158,206	1.3%	1,006,999	931,064	8.2%
Highway Traffic Count Across State Lines	41,318	NA	NA	NA	NA	NA
Transient Room Taxes (thous. of dol.)	775.2	NA	NA	NA	633.6	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	2,267.4	2,224.3	-1.9%	1,133.6	1,101.4	2.9%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	498,401	515,052	3.3%	509,294	494,963	2.9%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	186,762	195,593	4.7%	190,285	184,307	3.2%
Electric Customers (Residential)	481,930	489,470	1.6%	487,726	481,175	1.4%
Electric Customers (Commercial)	47,743	48,436	1.5%	49,187	47,527	3.5%
Natural Gas Customers (Residential & Commercial)	470,838	484,994	3.0%	481,253	466,681	3.1%
Natural Gas Customers (Industrial)	567	578	1.9%	569	560	1.5%

Utah Business Statistics

UTAH DATA	Jul. 1989	Jul. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	58.1r	60.8f	4.6%	57.6	55.3	4.2%
Unemployment Rate	4.2r	4.5	7.1%	4.1	4.3	−4.3%
Auth. Permit Construction (thous. of dol.)	10,112.1	18,400.9	82.0%	10,662.0	9,262.3	15.1%
New Dwelling Units (no.)	87	85	−2.3%	76	66	16.0%
Postal Receipts (thous. of dol.)	639.7	685.6	7.2%	646.5	536.9	20.4%
Electric Customers (Residential)	49,039	49,909	1.8%	49,668	48,582	2.2%
Electric Customers (Commercial)	3,610	3,624	0.4%	3,666	3,568	2.8%
Natural Gas Customers (Residential)	51,808	52,904	2.1%	52,477	51,261	2.4%
Natural Gas Customers (Industrial)	56	57	1.8%	56	55	2.6%
Telephone Lines in Service (Mt. Bell)(Residential)	57,016	60,476	6.1%	58,915	56,231	4.8%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,069	12,881	6.7%	12,483	11,719	6.5%
Salt Lake County						
Non-Ag. Employment (thous.)	350.7r	365.5f	4.2%	362.7	347.1	4.5%
Unemployment Rate	4.0r	3.9	−2.5%	3.9	4.3	−10.1%
Auth. Permit Construction (thous. of dol.)	33,440.0	78,095.7	133.5%	41,733.9	31,995.5	30.4%
New Dwelling Units (no.)	167	202	21.0%	190	170	11.6%
Postal Receipts (thous. of dol.)	7,372.8	7,265.1	−1.5%	8,057.6	8,273.3	−2.6%
Electric Customers (Residential)	241,864	245,823	1.6%	245,130	241,819	1.4%
Electric Customers (Commercial)	20,671	21,047	1.8%	21,108	20,701	2.0%
Natural Gas Customers (Residential)	223,645	228,032	2.0%	226,914	222,932	1.8%
Natural Gas Customers (Industrial)	244	246	0.8%	245	240	2.0%
Telephone Lines in Service (Mt. Bell)(Residential)	234,534	242,939	3.6%	239,742	232,849	3.0%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	113,237	118,518	4.7%	115,657	112,079	3.2%
Utah County						
Non-Ag. Employment (thous.)	84.2r	91.2f	8.3%	89.9	84.7	6.1%
Unemployment Rate	4.6r	3.9	−15.2%	3.8	4.1	−7.3%
Auth. Permit Construction (thous. of dol.)	12,905.9	18,063.0	40.0%	13,851.6	12,100.8	14.5%
New Dwelling Units (no.)	82	130	58.5%	92	71	30.3%
Postal Receipts (thous. of dol.)	1,298.1	1,579.5	21.7%	1,654.1	1,332.7	24.1%
Electric Customers (Residential)	52,967	53,114	0.3%	53,268	52,934	0.6%
Electric Customers (Commercial)	6,072	6,100	0.5%	6,778	5,995	13.1%
Natural Gas Customers (Residential)	62,638	64,278	2.6%	63,896	62,551	2.1%
Natural Gas Customers (Industrial)	73	74	1.4%	73	72	2.0%
Telephone Lines in Service (Mt. Bell)(Residential)	65,455	66,334	1.3%	66,517	65,727	1.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	21,278	21,056	-1.0%	20,360	21,049	−3.3%
Weber County						
Non-Ag. Employment (thous.)	62.8r	66.1f	5.3%	66.0	63.4	4.1%
Unemployment Rate	5.3r	5.8	9.4%	5.2	5.6	−7.3%
Auth. Permit Construction (thous. of dol.)	4,744.7	6,941.4	46.3%	6,810.8	5,149.7	32.3%
New Dwelling Units (no.)	48	45	−6.3%	45	44	1.9%
Postal Receipts (thous. of dol.)	549.7	596.8	8.6%	710.3	679.0	4.6%
Electric Customers (Residential)	53,949	54,760	1.5%	54,565	53,951	1.1%
Electric Customers (Commercial)	4,948	5,112	3.3%	5,071	4,981	1.8%
Natural Gas Customers (Residential)	50,285	51,321	2.1%	51,019	50,279	1.5%
Natural Gas Customers (Industrial)	85	83	−2.4%	84	84	−0.7%
Telephone Lines in Service (Mt. Bell)(Residential)	47,424	46,993	−0.9%	47,155	47,014	0.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,212	13,210	8.2%	12,809	12,149	5.4%

1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
a	Number is small due to a computer failure in government offices. August number will therefore be much higher than normal.
r	Revised
f	Forecast

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture*.
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report*.
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

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NATIONAL DATA	Jul. 1989	Jul. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,238.6	NA	NA	NA	5,077.5	NA
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,398.2	4,672.4	6.2%	4,538.1	4,266.0	6.4%
Industrial Production Indexes (seasonally adjusted) (1987=100)	107.8	109.9	1.9%	108.6	107.5	1.1%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	484.9	NA	NA	NA	456.1	NA
Net Exports of Goods and Services (bil.) (qtly.)	–49.3	NA	NA	NA	–58.2	NA
Exports of Goods and Services (bil.) (qtly.)	623.7	NA	NA	NA	600.5	NA
Imports of Goods and Services (bil.) (qtly.)	673.0	NA	NA	NA	658.7	NA
Index of Leading Indicators (1982=100)	144.1	146.1	1.4%	145.2	144.6	0.4%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	124.4	130.4	4.8%	127.5	121.7	4.8%
CPI-U (All Urban Consumers) Food & Beverages	125.4	132.4	5.6%	129.2	122.3	5.6%
CPI-U (All Urban Consumers) Housing	123.9	129.2	4.3%	126.0	121.0	4.1%
CPI-U (All Urban Consumers) Transportation	115.4	118.4	2.6%	116.3	112.3	3.6%
CPI-U (All Urban Consumers) Medical Care	149.7	163.5	9.2%	156.8	144.4	8.6%
CPI-U (All Urban Consumers) Energy	98.5	99.8	1.3%	96.2	92.5	4.1%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	114.0	118.0	3.5%	116.2	111.4	4.3%
GNP Price Deflator (1982=100) (qtly.)	126.8	NA	NA	NA	124.4	NA
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.0	124.8	0.6%	124.5	123.0	1.2%
Total Civilian Employment (mil.)	117.4	118.0	0.5%	118.0	116.5	1.3%
Unemployment Rate	5.3	5.5	3.8%	5.3	5.3	0.2%
Construction						
Total Construction (mil. of dol.)	23,363.8	20,893.3	–10.6%	20,487.0	21,936.1	–6.6%
Residential	10,535.4	9,745.1	–7.5%	9,503.9	10,269.0	–7.5%
Nonresidential	8,725.2	7,323.4	–16.1%	7,178.6	7,731.2	–7.1%
Non-Building	4,103.2	3,824.8	–6.8%	3,804.5	3,935.9	–3.3%
New Dwelling Units (no.)	122,631	101,310	–17.4%	103,438	119,329	-13.3%
Interest Rates						
Federal Funds Rate	9.24	8.15	–11.8%	8.46	9.03	–6.3%
Short Term (3-month Treasury bill rate)	7.92	7.66	–3.3%	7.73	8.02	–3.6%
Long Term (30-year Treasury bond yields)	8.19	8.64	5.5%	8.47	8.98	–5.7%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	10.98	10.00	–8.9%	10.22	10.70	–4.5%
Mortgage Rates (new homes)	10.06	9.75	–3.1%	9.75	9.38	4.0%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F.W. Dodge Report, McGraw-Hill: National Construction Data.

U.S. Department of Labor, Bureau of Labor Statistics: Consumer Price Indexes, Producer Price Index.

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Utah Economic and Business Review

Volume 50
Numbers 11 and 12
November -
December 1990

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UTAH'S ADJUSTMENT TO DECLINING DEFENSE BUDGETS

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Introduction

In response to a joint resolution passed by the 1990 Utah State Legislature, the Bureau of Economic and Business Research, undertook a critical assessment of Utah's defense industry, particularly evaluating the impact of declining defense budgets and developing an action plan that could be used by the state to ameliorate the adjustment process.

During the course of the study, world events in the Middle East have forestalled, at least over the short term, any significant reductions in military spending. However, declining defense budgets are inevitable as pressures to reduce the federal deficit intensify.

While reduced commitments to military spending will enable the government to allot more money for other activities, it is increasingly apparent that the amounts will not be enough to significantly invigorate the economy. Defense spending, as a percentage of Gross National Product, is at its lowest point in modern history (roughly 5.5% of GNP in FY 1990), and real declines have been occurring since 1986. Indeed, cutbacks in defense may mean more spending for social programs, but not in the magnitudes originally thought.

Furthermore, the subsequent adjustment process bears a cost. Nationally, the macroeconomic impacts of declining defense budgets are unlikely to have a significant impact; however, at the regional level in areas which depend heavily on defense activities, those impacts could be severe.

The potential for industrial, labor force, and community disruptions is real. The purpose of this study is to explain the significance of military spending in the Utah economy, to identify the possible impacts of reductions and discuss appropriate actions that could be taken by the state to offset any negative impacts. The highlights of that study are presented in this article.

UTAH'S DEFENSE ECONOMY

Defense spending in Utah has long been recognized as a key source of income and employment for Utah residents, and a significant component of economic activity and growth. In 1989, roughly $2.0 billion in direct defense-related expenditures entered the Utah economy. The defense industry and military establishments employ approximately 50,300 people in Utah, or 6 percent of the civilian labor force. When the secondary impacts are considered, defense expenditures in Utah represent between 16 and 18 percent of total personal income, and at least 14 to 16 percent of the state's civilian labor force.

Composition of Utah's Defense Industry

Defense activity in Utah is almost evenly split between the industrial sector and military bases -- the two primary components of defense spending in the state. Industrial sector expenditures consist of direct purchases, in the form of Prime Contract Awards (PCAs) from contractors. Direct spending at military bases consists of direct salaries and wages paid to military and civilian DOD employees. Secondary, and much less important sources of defense spending are, military retirement pay and federal grants to state and local governments (Exhibit 1). Since 1983, the most stable source of defense spending in Utah has been wages and salaries paid to military and civilian DOD personnel. During the same time period, PCAs have been highly volatile. After peaking in 1986, the dollar value of prime contract awards declined sharply, hitting a five-year low in 1988.

In 1989, Utah received $2,076,807,000 from DOD, representing about 34 percent of all federal expenditures made in the state during that year.[1] Of the total, $948,600,000 was spent on military payrolls (wages, salaries, and fringe benefits) at Hill Air Force Base, Tooele Army Depot, Defense Depot at Ogden, Dugway Proving Grounds, and National Guard Units. Slightly more than $1.0 billion went to Utah companies (in the form of PCAs) who provided a variety of goods and services to agencies of DOD. However, the total $1.0 billion paid in PCAs to Utah firms represents only a portion of defense activity in Utah.

Prime contract data are an imperfect measure of total activity for several reasons. First, the data indicate when awards are made, but the actual expenditure may not occur during the specified year. A more serious limitation is the lack of subcontractor data. There is a substantial flow of defense spending on subcontracts (estimated by DOD to be about 50% of total PCAs) that is not reflected in the PCA data. Furthermore, PCAs identify the location of final stage production, but do not identify the share of work performed by subcontractors, or where the subcontracting share will be done.

Essentially all of Utah's major defense contractors do both prime contracting work for the Department of Defense and subcontracting work for other large defense contractors, many of which are not located in Utah. Finally, there is a great deal of PCA "leakage"; that is, prime contracts that are awarded to Utah companies but subcontracted to non-Utah firms. Therefore, the figures referred to in this study reflect only the **direct** expenditures made in Utah by DOD.

Exhibit 1
Federal Defense-Related Spending in Utah
1981 - 1989
($000s)

Year	Wages and Salaries[a]	Prime Contract Awards	Military Retirement	State/Local Government Grants	Total
1983	$667,761	$ 722,224	$ 81,024	$ 18	$1,471,027
1984	695,776	885,546	88,844	131	1,670,297
1985	737,548	1,115,879	90,220	695	1,944,342
1986	784,567	1,688,947	94,612	301	2,568,427
1987	794,294	1,343,924	98,743	5,766	2,242,727
1988	817,787	876,681	98,876	1,318	1,794,662
1989	870,295	1,010,016	108,005	10,186	1,998,502

[a] Does not include fringe benefits.
Source: Wage and Salaries, Military Retirement, and Grants to State and Local Governments: *Federal Expenditures by State for Fiscal Years 1983 through 1989*, U.S. Department of Commerce, Bureau of the Census; Procurements: Federal Procurement Data System, *DOD Federal Contract Awards over $25,000 for All 50 States*, Performed in Utah, DOD Summary Report (1989).

DOD Contract Awards

Total estimated employment within the defense industry is 22,500, with an annual payroll in 1989 (wages, salaries and fringe benefits) of $901,501,380.[2] As in the case nationally, defense jobs in Utah are comparatively high-paying. In 1989, workers in the defense sector averaged $30,816 annually while the state's non-agricultural annual payroll wage averaged $19,020.

Although in 1989 the total dollar volume of prime contracts awarded was higher than the total awarded in Utah in 1988, it was at least $300 million less than in 1987 and $600 million less than the total awarded in the peak year of 1986. Another measure of the volatility in prime contracting activity is the change in the number of companies receiving PCAs. In 1987, 535 companies received PCAs in Utah; 92 companies received more than one award. By the end of 1989, the number of Utah companies receiving a PCA had shrunk to 477, with only 65 receiving multiple awards.

Of the $1.0 billion in PCAs awarded to Utah during 1989, 53.1 percent was awarded by the Air Force, 20.1 percent was awarded by the Army, and the Navy awarded 12.4 percent. The remaining 14.4 percent was awarded by other agencies for defense-related activities.

Direct purchases by DOD from Utah companies consist primarily of manufactured goods -- $624.5 million of the $1.01 billion in 1989 PCAs (Exhibit 2). Utah's defense industry is characterized by high concentrations in the missile program which is dominated by Thiokol Corporation and Hercules Aerospace Company -- the only companies receiving prime contracts of more than $100 million in 1989.

Utah's defense industry is heavily concentrated in the missile programs. Components of two of the country's largest unclassified strategic systems -- the MX and Trident 2 Systems -- are being manufactured in Utah. The missile program has been key to the state's industrial defense growth. Thiokol, Hercules, Boeing, and TRW are all participating in the production and operation of the Air Force's Peacekeeper missile (MX), an advanced system replacing the Minuteman missile. Hercules is producing the third-stage motor and Thiokol is producing the first-stage motor.

Hercules and Thiokol are also involved in the development of another strategic missile, the Trident 2. Both Hercules and Thiokol are participating in the manufacture of the propulsion systems for the Trident 2. Thiokol is producing first and second-stage Trident 2 motors.

Hercules is partner with Thiokol on the first-stage motor. The Midgetman missile is yet another system on which Hercules and Thiokol are working. Hercules is developing the third-stage motor, laser ordnance system, stage separator, and ignition system. Thiokol is developing the first-stage motor for the missile.

Beyond the strategic missile programs for the Air Force and the Navy, Thiokol, Hercules, and Williams International are also propulsion manufacturers for a number of other DOD missile programs (HARM, ALCM, and STANDARD). Teleflex Defense Systems also produces missile launch systems for the AMRAAM missile, and the Army's Tow 1,2,2A missile system.[3]

This high concentration in the missile program is demonstrated in PCA data. In Utah, the heaviest concentration of defense spending occurs in the Transportation Equipment Standard Industrial Code (SIC 37); specifically in SIC 3764 which includes guided missiles, space vehicles, propulsion units and parts. In 1987, contracts awarded to companies classified under this SIC code totaled $844 million; an increase of $252 million over 1986 and approximately 63 percent of all PCAs awarded to Utah in 1987. Not surprisingly, the average annual employment reported in this segment of the manufacturing industry also increased, although not as dramatically.

In both 1988 and 1989, PCAs in SIC 3764 have been lower than at any point prior to 1987. Subsequent drops in employment have occurred and further reductions are expected. However, the magnitude of these reductions is difficult to determine for the following reasons: (1) Contracts have different terms and completion dates; (2) a large part of the contract may be earmarked for completion outside of Utah; and (3) the amount of subcontracting work that enters the state is unknown.

Many companies in Utah receive PCAs, but not all depend on defense contracting for their revenues. Other sizable segments of Utah's defense industry include Services ($118.2 million) and Construction ($115.5 million). And, while many of Utah's largest companies regularly receive PCAs, almost half (46.5%) of the companies winning DOD awards in 1989 had fewer than 100 employees. Construction firms and consulting companies were among the smallest. Exhibit 3 identifies those companies receiving large PCAs in 1989 and their primary products and/or services. These 16 organizations accounted for little over 75 percent of all PCAs awarded in 1989.

Exhibit 2
Prime Contract Awards Performed in Utah Grouped by Major Industries
1987 - 1989

Industry	1987	1988	1989
Mining	**$0**	**$0**	**$760,000**
Construction	**54,971,000**	**77,922,000**	**118,419,000**
Manufacturing	**1,088,685,000**	**560,631,000**	**643,685,000**
Petroleum Refining	13,878,000	17,222,000	76,613,000
Electronic, Electrical Equipment and Components	106,81,0009	82,633,000	32,441,000
Transportation Equipment	884,088,000	333,784,000	490,729,000
Transportation and Public Utilities	**20,150,000**	**21,677,000**	**68,657,000**
Electric, Gas and Sanitary Services	19,339,000	20,066,000	13,903,000
Wholesale Trade	**30,090,000**	**31,037,000**	**21,045,000**
Durable Goods	26,995,000	28,723,000	18,046,000
Retail Trade	**1,299,000**	**1,167,000**	**2,243,000**
Eating and Drinking Places	741,000	317,000	1,257
Finance, Insurance, Real Estate	**749,000**	**666,000**	**0**
Services	**104,391,000**	**153,878,000**	**118,575,000**
Business Services	29,906,000	31,999,000	14,874,000
Educational Services	18,014,000	21,496,000	36,171,000
Engineering, Research, Management Services	48,964,000	95,274,000	60,929,000
Local Governments	**632,000**	**1,547,000**	**2,057,000**
Total	**$1,300,967,000**	**848,525,000**	**975,441,000**
Not Specified[a]	42,957,000	28,156,000	34,575,000
Grand Total	**$1,343,924,000**	**$876,681,000**	**$1,010,016,000**

[a] Includes Prime Contracts awarded to companies for which no SIC or industry designation could be identified.

Source: Federal Procurement Data System, *DOD Federal Contract Awards over $25,000 for all 50 States,* Fiscal Year 1989.

Exhibit 3
Companies Receiving Largest Prime Contract Awards Performed in Utah - 1989

Company	Multiple Contracts	Prime Contract Award ($000s)	Product or Service
Thiokol Corporation	Y	$293,244	Solid propulsion systems, ordnance and composite products for space and defense.
Hercules Aerospace Company	Y	158,987	High energy solid propellants and high performance structures for DOD, NASA and commercial applications.
Amoco Corporation	N	49,710	Oil refining.
EG&G Intertech	N	46,921	Construction.
Utah State University	N	31,705	Educational institution.
TRW Inc.	Y	30,836	Technical support for the Peacekeeper and Minuteman missile programs.
Oakland Construction	N	30,570	Commercial and industrial contractor.
Crysen Refining Corporation	N	19,024	Gasoline, diesel and jet fuels, and asphalt materials.
Litton Systems	N	15,098	Inertial navigation systems for ships, aircraft, and missiles.
Big D Construction	Y	12,260	Non-residential contractor.
Clement Brothers	N	12,000	General contractor.
Unisys Corporation	Y	11,478	Specialized microwave communication systems for military applications.
Gramoll Construction	N	11,436	Construction.
Utah Power & Light	Y	11,225	Electric company.
Williams International Corporation	N	10,714	Small gas turbo engines for the Cruise missile program, and jet engines for target drone for Northrop Corporation.
Fiber Technology	N	10,188	External survivable fuel tanks for helicopters.

Source: Federal Procurement Data System, *DOD Federal Contract Awards over $25,000 for All 50 States,* Performed in Utah in Fiscal Year 1989.

County Distribution of Prime Contract Awards

As shown in Exhibit 4, PCAs are concentrated in a handful of Utah counties - namely, Box Elder, Davis, Salt Lake, Tooele and Weber. This level of concentration has remained fairly constant over the past five years with the exception of a substantial increase in Tooele County resulting from several large construction projects at Tooele Army Depot and Dugway Proving Grounds (Exhibit 4).

Exhibit 4
Department of Defense Contract Awards by County
1984 Through 1989
($000s)

County	1985	1986	1987	1988	1989
Box Elder	$179,409	$226,967	$558,619	$186,480	$286,668
Cache	19,696	31,376	13,281	17,535	35,659
Carbon	845	1,844	650	7,323	4,215
Davis	222,453	352,129	154,528	211,153	143,119
Duchesne	0	0	98	0	4,029
Grand	451	451	0	0	0
Juab	0	0	91	217	0
Morgan	109	145	62	35	0
Rich	0	30	0	56	0
Salt Lake	596,535	896,492	485,428	333,418	318,662
San Juan	2,155	2,974	972	794	1,410
Sanpete	0	0	92	0	0
Sevier	1,126	1,747	532	357	605
Summit	92	121	45	0	1,232
Tooele	32,774	77,377	44,989	47,187	131,824
Uintah	0	0	135	392	225
Utah	21,558	33,928	23,023	35,542	34,727
Washington	9,679	9,679	0	489	199
Weber	29,037	53,754	61,379	35,428	47,442
Total	$1,115,879	$1,688,947	$1,343,924	$876,681	$1,010,016

Source: Federal Procurement Data System, *DOD Federal Contract Awards over $25,000 for All 50 States,* Fiscal Years 1985 Through 1989, Arlington, VA.

Military Activities

In 1989, the Department of Defense employed 28,000 people (22,000 civilian DOD and 5,800 military) at military bases located throughout Utah. Almost $1.0 billion was spent for military and civilian payrolls (wages, salaries, and fringe benefits). The average annual wage in 1989 for military and Civilian DOD employees was $29,538 -- again, significantly higher than the average non-agricultural wage in the state.[4]

Utah's inventory of active military bases includes Hill Air Force Base, Tooele Army Depot, Defense Depot at Ogden, and Dugway Proving Ground (Exhibit 5). Military bases have played an active role in shaping Utah's economy. For example, the growing demand by DOD for the services and support provided by Hill Air Force Base has resulted in a base employment level of almost 20,000 employees - making it the largest employer in Utah. Along with the contributions made by military bases to Utah's economic growth has come a certain degree of vulnerability at the local level. Military spending in Utah is unevenly distributed and is heavily concentrated in a few counties -- Davis, Weber, Tooele, and to a lesser extent, Salt Lake.

Exhibit 5
Economic Profile of Military Bases in Utah - 1989

	Employment	Payroll[a]	Operating Budget
Hill Air Force Base	19,879	$590,113,804	$1,400,000,000[e]
Tooele Army Depot	4,053	158,100,000	279,400,000
Defense Depot Ogden Utah[b]	2,315	82,400,000	$114,800,000
Dugway Proving Grounds	1,114	32,500,000	90,000,000

[e] estimate
[a] Payroll figures do not include fringe benefits.
[b] Payroll and operating budget figures do not include 1120th Army Signal Battalion.
Source: Interviews with base personnel, November 1990 and various base publications.

At the present time there is a great deal of uncertainty as to future defense spending levels; however, none of the bases identified have been slated for closure, though consolidations and employment reductions are anticipated. Recently, as a result of budgetary constraints, Hill Air Force Base has announced plans to reduce its work force during the upcoming year.

Trends

Changing defense strategies at the federal level are certain to have significant implications for Utah as reductions in defense spending appear inevitable. Though developments in the Middle East have slowed momentum for deep defense cutbacks, and may forestall any significant reduction in the short term, the major changes in Eastern Europe, combined with pressures to reduce the federal deficit, make it likely that long-term defense spending will continue its downward spiral. According to *Aviation Week and Space Technology*, neither Operation Desert Shield, nor the prospect of new arms sales to Middle Eastern Allies, will pull the U.S. defense industry out of its steepest nosedive in 40 years. Some of the major trends in defense contracting include:

- **Increasing competition.** Most defense contractors will be conducting business in a much more competitive environment than in the past. Shrinking defense budgets will mean fewer contracts, canceled programs, and a diminishing amount of new business. One way that companies have tried to ameliorate their losses is to reduce the amount of work they subcontract. While this effectively postpones employee displacement at the prime contractors, it increases competition at the subcontracting level.

  Utah's businesses, defense and non-defense alike, are already feeling the effects of this competitive environment. Utah companies compete for PCAs with companies located throughout the United States. Many companies have indicated that they are now competing for contracts with a growing number of non-Utah firms.

- **Changing Environment in Defense Contracting.** Along with reductions in defense spending, DOD is also changing the way it does business. There will be even fewer cost-plus contracts as DOD tries to shift part of the risk to the contractor. The federal government is demanding more up-front investment requiring private industry to assume more risk in developing weapons systems. Penalties for contract discrepancies are becoming more prevalent. There is a greater emphasis on awarding contracts based on the lowest price where, in previous years, more consideration was given to technical qualifications, experience and ability. Finally, DOD is also encouraging greater participation in the bidding process by foreign competitors.

- **Change in Demand.** In the upcoming era of greatly reduced military spending, major weapon production programs are winding down. Inside and outside the government there is widespread uncertainty about the need for new weapons and systems which until recently were taken for granted.

- **Consolidation of Military Bases.** In 1989 Secretary of Defense Dick Cheney proposed closing 29 military bases, depots, and plants located throughout the U.S. While events in the Middle East have temporarily forestalled the closure of military bases throughout the United States, it is clear that base closures and consolidations are inevitable.

- **Reductions in Defense Industry Employment.** Unemployment in the aerospace industry is expected to soar as defense contractors become adjusted to shrinking defense budgets. Since January 1990, according to industry analysts, more than 45,000 defense-related jobs at major defense manufacturers have been earmarked for elimination sometime within the next 18 months. An additional 90,000 to 135,000 positions could be lost at the vendor level as a consequence of cutbacks at the prime contractors. The majority of the 45,000 defense related jobs planned for elimination are in the manufacturing sector. Analysts are projecting that these individuals will have a difficult time finding employment within the industry as hiring in the commercial segment has come to a standstill.

As result of reduced spending at the federal level, and in the face of increased competition, many of Utah's large defense contractors have gradually been reducing their employment levels over the past two to three years, largely through attrition. As defense companies scale back to keep in line with declining military expenditures, the long-term outlook is for continued reductions, which will likely involve layoffs over and above what can be accomplished through normal attrition.

Effects of Reduced Defense Spending on Utah

While reduced commitments to defense may enable the government to allot more money for other endeavors, the adjustment process has its costs. Disruptions, which are certain to occur at defense-related companies, will impact all levels of Utah's economy. The effects of reduced spending will have direct consequences for defense contractors and subcontractors, military bases, and finally, state and local units of governments.

Depending upon what components of the defense budget are cut, reductions in defense outlays could result in employment layoffs in Utah ranging from 2,700 to 6,000 people through the end of 1991. These reductions represent total direct, indirect, and induced impacts; are a worst case scenario; and assume that no diversification takes place. Based on current federal policies, further declines of 3 to 5 percent annually from 1992 to 1997 are realistic.[5]

What will declining defense budgets mean for Utah's military bases? Utah's military bases are perhaps most vulnerable to cutbacks within the next 12 months. Private defense contractors have more flexibility in using the commercial market to offset reductions in the defense market. Operations at military bases are driven by the availability of budgeted monies, and consolidation and closure decisions made at a higher level. One military base in Utah, HAFB, has already felt the repercussions of cutbacks, and recently announced a reduction in force effective early in 1991. However, at the present time, not one of the state's active military bases has been slated for closure. Furthermore, there is pending legislation that would require advance notification of potential base closure and federal monies available to assist communities in the economic conversion process that follows a base closure.

How will these layoffs affect local economies? In general, the sensitivity of an economy to changes will depend on the strength of that economy. A relatively large cut in a well-diversified, growing economy is more easily absorbed than a small dollar cut in a defense-dependent one. In Utah the economic base of several counties (Box Elder, Davis, Weber, and Tooele) is relatively dependent upon military spending. Determining the actual impacts on these economies of military base layoffs and cutbacks in defense contracts was beyond the scope of this study; however, the likely impacts will include fewer sales at local businesses, and a reduction in the local tax base.

What are the consequences for industry? Utah's defense contractors vary in their reliance on defense, but most depend upon military spending for at least 50 percent of their revenues. Conversion or diversification will be most difficult for companies which manufacture complete or semi-complete systems (weapons, missiles, etc.). Companies which manufacture components, especially electronic components, face fewer challenges in entering the commercial market. It is possible that some defense contractors may reevaluate their commitment to defense and opt to leave the industry altogether. Industry analysts estimate that it takes approximately three to five years for a defense contractor to successfully reduce the ratio of defense to commercial business. Those who choose to remain will have to streamline their organizations and fight even harder for a decreasing number of contracts. Either option has limitations and a high degree of certainty that further employment reductions are forthcoming.

The long term picture may be brighter. There is a growing recognition in Congress that the need for an effective military capability did not disappear with the end of the Cold War in Eastern Europe. In all likelihood declines in defense expenditures will be gradual and orderly, thus allowing contractors to keep manpower disruptions at moderate levels.

In any case, the adjustment process is not an unfamiliar one with Utah businesses. On at least three occasions in the past, the Utah economy has experienced substantial reductions in defense spending. These cutbacks have been associated with demobilization following World War II, the Korean Conflict and the Vietnam War. Although the present prospect of reduced defense spending is not related to demobilization from a wartime economy, the consequences are expected to be the same -- employment layoffs for military installations and defense contractors.

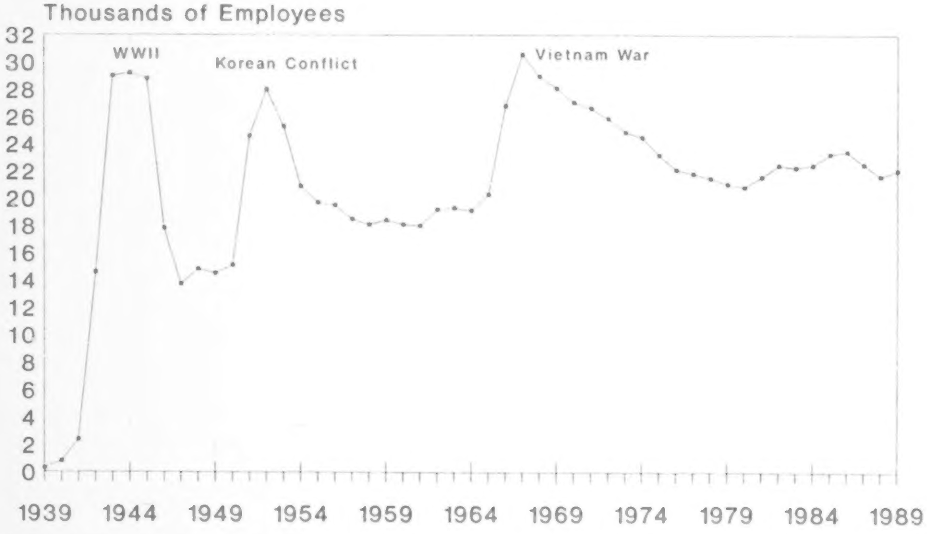
The World War II Experience

Federal Defense Employment. World War II introduced large-scale defense spending to the western United States and Utah. Prior to World War II, federal defense employment at military installations in Utah was less than 1,000. Mobilization for war and the construction of eight federal military installations[6] in the state brought employment to 30,000 by 1944; once the war was over employment at these new military installations plummeted by more than 50 percent to 14,000, Chart 1

Defense Manufacturing. Combined with the large loss of jobs at military installations was the loss of jobs in defense manufacturing activities. The most notable was the Remington Arms Company which operated in Salt Lake County. Employment at Remington peaked in 1942 at 10,000, but by 1945 had dropped to 1,500. Two other examples of significant defense-induced employment declines are: (1) Geneva Steel Plant where over 3,000 employees were laid off between 1944 and 1945; and (2) Eitel-McCullough, a radio tube manufacturer, where employment fell from 1,700 in 1943 to only 600 in 1945.

Adjustment Process. Although the Utah economy experienced massive defense employment cutbacks following World War II, no state agencies or programs were developed to assist in the economic transition from a wartime to peacetime economy beyond the activities of the Utah Department of Employment Security. During the transition period, 1945 to 1950, the unemployment rate fluctuated between 4.5 percent and 7.5 percent. "After the end of World War II fighting, in 1946, when the rest of the nation was beginning its readjustment period and employment was dropping, Utah's rate of unemployment remained relatively stable. Utah was one of the few states in the nation to 'hold its own' during this period."[7]

Chart 1
Federal Defense Employment in Utah
1939 - 1989



Source: Utah Department of Employment Security

The Korean Conflict/Cold War Experience

Federal Defense Employment. The Korean Conflict pushed federal defense employment back near the peak levels of World War II. In less than 24 months, federal defense employment in Utah increased from 15,000 to 28,000, but it was short-lived. By 1955, only three years later, federal defense employment had fallen to 19,700 as demobilization once again led to widespread employment layoffs, Chart 1.

Defense Manufacturing. Unlike World War II, the aftermath of the Korean Conflict was not accompanied by significant declines in defense manufacturing. Instead, the beginning of the Cold War and impressive Soviet missile innovations created a new defense industry in Utah, which helped to offset the reductions in federal defense employment. The new aerospace industry in Utah had its beginning in 1956 with the Sperry Utah operations in Salt Lake City and the Marquardt operations in Ogden. These were followed by operations at Thiokol in Box Elder County in 1957, Hercules' expansion into missile work in 1958 and the location of the Boeing Company at Hill Air Force Base in 1959. Employment in Utah's aerospace industry reached 13,000 by the early 1960's. "Air Force contracts let in Utah for missile work began to spiral, and the Beehive State's proportion of defense contracts rose rapidly to 1.6 percent of total DOD awards. By 1963, Utah was receiving $408 million in defense contracts, an absolute gain of 1700 percent since the Korean Conflict, and the largest gain recorded by any state."[8]

Adjustment Process. Beyond the activities of the Utah Department of Employment Security, no state agencies or programs were developed to assist in the economic adjustment following the Korean Conflict.

The Vietnam War Experience

Federal Defense Employment. Utah's military installations experienced another round of rapid employment increases during the Vietnam War. Between 1965 and 1967 federal defense employment in Utah rose 50 percent from 20,000 to 30,000 employees. Demobilization following the Vietnam War was much more gradual than the experience of World War II and the Korean Conflict. Employment reductions averaged about 3 percent a year (800 to 1,000 employees) from 1967 to 1980, when total federal defense employment bottomed out at 20,000 employees.

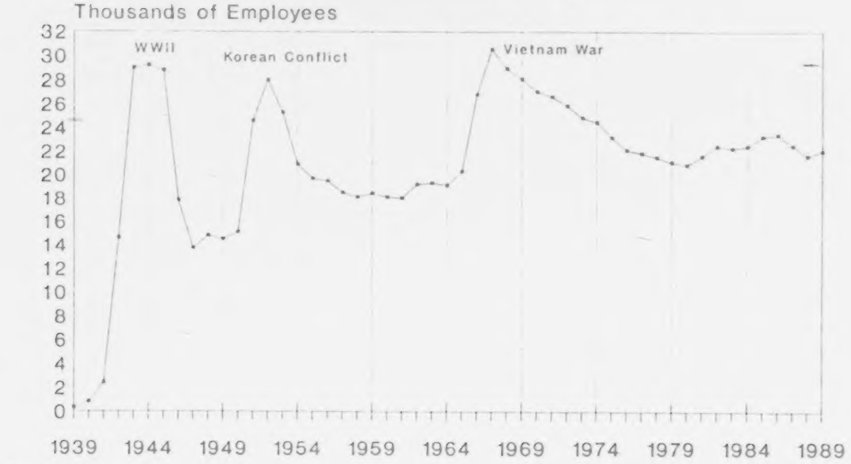
Defense Manufacturing. Defense manufacturing following the Vietnam War did not experience severe cutbacks, but rather had stable to modest employment growth throughout the decade of the 1970's.

Adjustment Process. Beyond the activities of the Utah Departent of Employment Security no state agencies or programs were developed to assist in the economic adjustment following the Vietnam War. The gradual rate of demobilization combined with economic prosperity countered the need for government assistance programs. As noted by Curtis Harding, Administrator of Utah Department of Employment Security, "Without exception, 1973 has been our best year ever. Possibly we are on the threshold of a monumental turning point in the state's economic history. We have just passed through a two-year period in which the Utah economy has generated new nonfarm, wage and salary jobs at the astonishing rate of over 20,000 per year...it appears we have left a long-term annual growth factor of 3 percent, which has prevailed for nearly 20 years, and stepped up to an annual growth rate in the range of 5 percent."[9]

Historical Comparisions

In relative terms, there is little comparison between the adjustment process required following World War II and that anticipated from reduced military spending in the 1990's. In 1945, the 28,000 federal defense employees in Utah accounted for 17 percent of the state's nonagricultural employment; whereas, in 1989 federal defense employment of 22,000 represented only 3 percent of the nonagricultural employment in the state. For purposes of comparability with the World War II period, federal defense employment in Utah in 1990 would have to approach 120,000 and then plummet to about 59,000 by 1992. And to be analogous to the Korean Conflict, federal defense employment in Utah would have to be about 94,000 in 1990 and then fall to 67,000 by 1992. Chart 2 shows federal defense employment as a percent of total nonagricultural employment from 1939 to 1989.

Chart 2
Federal Defense Employment as a Percent of Total Employment in Utah, 1939-1989



Source: Utah Department of Employment Security

Conclusion

Economic volatility created by dramatic shifts in defense spending has been a characteristic of the Utah economy for nearly 50 years. Historically, during periods of spending cutbacks the state has taken no direct action to provide financial, marketing or management assistance to defense manufacturers. For individuals who have been laid-off, state assistance has been limited to existing Employment Security programs such as job training and unemployment compensation.

In the past, employment layoffs have set in motion labor market adjustment processes that have mitigated the impacts on individuals and communities. The most important adjustment process has been the geographic mobility of labor. Defense workers exhibit a high degree of geographic mobility, i.e., laid-off workers seek employment elsewhere as in the case of the more than 1,000 engineers and scientists laid-off at Thiokol in 1989. The second adjustment process has been industrial mobility. In order to find reemployment many workers accept employment in another industry. The third adjustment process has been occupational adjustments. An unemployed defense engineer will seek non-engineering work elsewhere. The fourth adjustment process has been for the unemployed worker to lower his/her labor price to facilitate reemployment.

Hence, it is fair to say that the adjustment process to reduced defense spending has been left to market forces. Although reduced defense spending has created short-term economic dislocations for individuals and firms the adjustment process, in the past, has been achieved through the dynamics of the market economy, which has reallocated financial, physical and human resources to efficient uses.

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[1] Total federal expenditures in Utah during 1989 were $6,191,000,000. Source: *Federal Expenditures by State for Fiscal Year 1989*, U.S. Department of Commerce, Bureau of the Census, (March 1990).

[2] Employment estimates: Defense Budget Project (Washington D.C.); Payrolls and average monthly wage information: Bureau of Economic and Business Research based on prime contract award data and average wage data provided by the Utah Department of Employment Security.

[3] *Aerospace Target Industry Study*, Bureau of Economic and Business Research, Graduate School of Business, University of Utah (1989).

[4] Military and civilian DOD employment estimates: Defense Budget Project (Washington D.C.); Payroll data: *Federal Expenditures by State for Fiscal Year 1989*, U.S. Department of Commerce, Bureau of the Census, (March 1990); Monthly wage information: calculated by BEBR based on prime contract award data and average wage data provided by the Utah Department of Employment Security.

[5] These figures represent the ranges of layoffs that could occur depending upon which components of the defense budget are cut.

[6] Hill Field, Clearfield Naval Supply Depot, Utah Army Service Forces Depot, Ogden Arsenal, Tooele Ordnance Depot, Deseret Chemical Warfare Depot, Dugway Proving Grounds, and Tooele Engineering and Redistribution Center.

[7] Nelson, Elroy. Utah's Economic Patterns, (1956) pg. 15.

[8] Clayton, James L. The Economic Impact of the Cold War, (1970), pg. 74.

[9] Harding, Curtis P. "The New Utah", Utah Economic and Business Review, (September 1973).

Utah Business Statistics

UTAH DATA	Aug. 1989	Aug. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	22,444	NA	NA	NA	21,769	NA
New Corporations (no.)	420	685a	63.1%	495	449	10.4%
New Car, Truck, and Motor Home Sales (no.)	5,953	NA	NA	NA	5,138	NA
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	71.90	74.80	4.0%	74.98	71.43	5.0%
Lambs (cwt)	62.80	46.00	-26.8%	52.50	62.33	-15.8%
Milk Wholesale (cwt)	12.30	13.50	9.8%	13.59	12.06	12.7%
Alfalfa Hay, Baled (per ton)	86.00	85.00	-1.2%	85.33	82.25	3.7%
Cattle Slaughtered (live weight) (thous. of lbs.)	49,677	51,346	3.4%	47,904	47,352	1.2%
Construction						
Total Construction (thous. of dol.) 1	83,879.3	110,589.4	31.8%	88,790.4	69,283.7	28.2%
Residential	47,809.9	60,441.3	26.4%	43,048.0	34,693.6	24.1%
Nonresidential	20,418.6	29,471.4	44.3%	29,456.1	21,827.6	34.9%
Additions, Alterations, and Conversions	15,650.9	20,676.7	32.1%	16,286.4	12,762.5	27.6%
Total Permit Construction (thous. of dol.) 2	84,777.9	137,865.7	62.6%	99,198.0	75,332.1	31.7%
Residential	45,251.8	66,205.7	46.3%	46,283.8	35,719.9	29.6%
Nonresidential	23,362.1	47,433.3	103.0%	37,536.8	26,102.1	43.8%
Additions, Alterations, and Repairs	16,164.0	24,226.7	49.9%	15,377.4	13,510.1	13.8%
New Dwelling Units (no.)	513	807	57.3%	566	456	24.1%
Employment						
Civilian Labor Force (thous.)	799.7	808.4	1.1%	797.5	778.6	2.4%
Total Employed Persons	763.2	773.1	1.3%	762.8	742.0	2.8%
Unemployed Persons	36.4	35.3	-3.0%	34.8	36.1	-3.8%
Percent Total Labor Force	4.6	4.4	-4.3%	4.4	4.7	-7.3%
Employees on Nonagricultural Payrolls (thous. of jobs)	690.9	723.4	4.7%	712.5	680.4	4.7%
Manufacturing	104.3	107.4	3.0%	104.8	102.1	2.7%
Mining	8.3	8.8	6.0%	8.5	7.9	8.0%
Contract Construction	28.7	29.6	3.1%	26.8	25.7	4.4%
Transportation, Communication, and Utilities	41.1	43.1	4.9%	42.4	40.5	4.8%
Wholesale Trade	39.2	40.5	3.3%	39.7	37.7	5.5%
Retail Trade	129.2	137.6	6.5%	133.3	125.2	6.5%
Finance, Insurance, and Real Estate	33.8	34.6	2.4%	33.8	33.3	1.6%
Services 3	168.8	180.8	7.1%	174.7	163.2	7.1%
Federal Government	40.5	39.5	-2.5%	40.3	39.9	0.9%
State Government 4	38.2	40.1	5.0%	41.4	39.5	4.9%
Local Government 4	58.9	61.4	4.2%	66.7	65.6	1.8%
Average Weekly Hours						
Manufacturing	40.2	39.8	-1.0%	40.0	40.2	-0.5%
Mining	41.6	43.7	5.0%	42.4	40.6	4.4%
Wholesale Trade	37.2	39.5	6.2%	37.0	37.6	-1.4%
Retail Trade	28.0	27.5	-1.8%	26.9	27.4	-1.6%
Amount of Unemployment Compensation (thous. of dol.)	4,401.6	3,745.5	-14.9%	4,905.6	5,221.4	-6.0%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,172.4	1,779.3	-18.1%	1,948.7	2,269.5	-14.1%
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	80,700.2	87,242.3	8.1%	163,248.9	151,863.8	7.5%
Sales and Use Tax	3,085.9	5,744.0	86.1%	58,764.8	56,184.3	4.6%
Motor Fuel Tax	12,333.7	12,449.3	0.9%	11,042.9	11,825.9	-6.6%
Individual Income Tax	45,612.6	49,631.1	8.8%	54,555.5	52,625.2	3.7%
Corporation Franchise Tax	195.2	1,104.0	465.6%	3,735.0	7,540.8	-50.5%
Production						
Crude Oil to Refineries (thous. of bbls.)	3,552.5	NA	NA	NA	4,205.3	NA
Crude Oil (thous. of bbls.)	2,417.1	2,282.1	-5.6%	2,322.7	2,447.8	-5.1%
Natural Gas (mil. of cu. ft.)	23,713.5	27,196.1	14.7%	25,355.0	22,791.7	11.2%
Coal (thous. short tons)	1,822.0	2,243.0	23.1%	1,902.3	1,575.7	20.7%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	1,218,317	1,213,716	-0.4%	1,006,615	944,252	6.6%
Highway Traffic Count Across State Lines	41,318	44,666	8.1%	43,002	NA	NA
Transient Room Taxes (thous. of dol.)	85.1	437.1	413.6%	670.7	549.1	22.1%
Visits, State, Nat'l. Parks, Monuments (thous.)	2,318.0	2,110.5	-9.0%	1,116.4	1,104.9	1.0%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	498,802	518,274	3.9%	510,917	495,956	3.0%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	186,970	196,880	5.3%	191,111	184,754	3.4%
Electric Customers (Residential)	483,513	489,297	1.2%	488,285	481,770	1.4%
Electric Customers (Commercial)	48,743	49,999	2.6%	49,334	47,663	3.5%
Natural Gas Customers (Residential & Commercial)	470,565	483,823	2.8%	482,358	467,986	3.1%
Natural Gas Customers (Industrial)	567	578	1.9%	570	561	1.5%

Utah Business Statistics

UTAH DATA	Aug. 1989	Aug. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	58.4r	60.4f	3.4%	58.0	55.6	4.2%
Unemployment Rate	4.6r	4.7	2.2%	4.2	4.2	-1.6%
Auth. Permit Construction (thous. of dol.)	10,120.0	9,421.7	-6.9%	10,603.8	9,021.7	17.5%
New Dwelling Units (no.)	78	80	2.6%	76	65	17.0%
Postal Receipts (thous. of dol.)	574.1	531.1	-7.5%	641.8	549.9	16.7%
Electric Customers (Residential)	49,133	50,110	2.0%	49,750	48,658	2.2%
Electric Customers (Commercial)	3,611	3,665	1.5%	3,670	3,578	2.6%
Natural Gas Customers (Residential)	51,652	52,707	2.0%	52,565	51,392	2.3%
Natural Gas Customers (Industrial)	56	57	1.8%	56	55	2.3%
Telephone Lines in Service (Mt. Bell)(Residential)	57,128	60,742	6.3%	59,216	56,368	5.1%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,072	12,995	7.6%	12,560	11,770	6.7%
Salt Lake County						
Non-Ag. Employment (thous.)	353.0r	369.1f	4.6%	363.8	348.2	4.5%
Unemployment Rate	4.1r	4.0	-2.4%	3.9	4.2	-8.1%
Auth. Permit Construction (thous. of dol.)	37,186.7	63,550.7	70.9%	43,930.9	32,024.9	37.2%
New Dwelling Units (no.)	176	244	38.6%	196	168	16.3%
Postal Receipts (thous. of dol.)	7,908.1	7,520.0	-4.9%	8,027.8	8,270.3	-2.9%
Electric Customers (Residential)	242,704	246,151	1.4%	245,417	242,159	1.3%
Electric Customers (Commercial)	21,165	21,093	-0.3%	21,102	20,756	1.7%
Natural Gas Customers (Residential)	223,028	227,171	1.9%	227,259	223,310	1.8%
Natural Gas Customers (Industrial)	245	246	0.4%	245	241	1.9%
Telephone Lines in Service (Mt. Bell)(Residential)	234,988	244,445	4.0%	240,530	233,274	3.1%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	113,383	119,196	5.1%	116,142	112,232	3.5%
Utah County						
Non-Ag. Employment (thous.)	85.9r	92.5f	7.7%	90.5	85.1	6.3%
Unemployment Rate	4.4r	3.6	-18.2%	3.8	4.1	-7.7%
Auth. Permit Construction (thous. of dol.)	12,789.5	22,248.2	74.0%	14,639.8	12,245.5	19.6%
New Dwelling Units (no.)	95	197	107.4%	100	72	40.2%
Postal Receipts (thous. of dol.)	1,328.8	1,612.9	21.4%	1,666.4	1,343.8	24.0%
Electric Customers (Residential)	53,398	52,335	-2.0%	53,257	52,934	0.6%
Electric Customers (Commercial)	6,346	7,585	19.5%	6,923	6,023	15.0%
Natural Gas Customers (Residential)	62,934	64,581	2.6%	64,033	62,679	2.2%
Natural Gas Customers (Industrial)	73	74	1.4%	74	72	1.5%
Telephone Lines in Service (Mt. Bell)(Residential)	65,131	66,812	2.6%	66,657	65,853	1.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	21,099	21,178	0.4%	20,366	21,146	-3.7%
Weber County						
Non-Ag. Employment (thous.)	63.1r	66.8f	5.9%	66.2	63.5	4.3%
Unemployment Rate	5.8r	6.4	10.3%	5.4	5.5	-3.2%
Auth. Permit Construction (thous. of dol.)	6,739.2	13,331.6	97.8%	7,360.2	5,196.1	41.6%
New Dwelling Units (no.)	57	48	-15.8%	44	44	1.1%
Postal Receipts (thous. of dol.)	639.4	708.1	10.7%	721.1	682.7	5.6%
Electric Customers (Residential)	53,998	54,996	1.8%	54,648	53,999	1.2%
Electric Customers (Commercial)	5,030	5,084	1.1%	5,075	4,986	1.8%
Natural Gas Customers (Residential)	50,264	51,000	1.5%	51,080	50,319	1.5%
Natural Gas Customers (Industrial)	85	82	-3.5%	83	84	-1.3%
Telephone Lines in Service (Mt. Bell)(Residential)	47,331	47,083	-0.5%	47,135	47,078	0.1%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,255	13,276	8.3%	12,894	12,167	6.0%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
a	Number partially includes July data not previously reported due to a computer failure in government offices.
r	Revised
f	Forecast

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture*.
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Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
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Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
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Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties

Utah Business Statistics

UTAH DATA	Sept. 1989	Sept. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	22,444	NA	NA	NA	21,900	NA
New Corporations (no.)	513	508	-1.0%	495	456	8.6%
New Car, Truck, and Motor Home Sales (no.)	4,794	5,468	14.1%	5,046	5,133	-1.7%
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	69.20	74.00	6.9%	75.38	71.56	5.3%
Lambs (cwt)	62.70	49.40	-21.2%	51.39	62.68	-18.0%
Milk Wholesale (cwt)	13.20	13.40	1.5%	13.61	12.17	11.8%
Alfalfa Hay, Baled (per ton)	85.00	80.00	-5.9%	84.92	82.92	2.4%
Cattle Slaughtered (live weight) (thous. of lbs.)	48,265	42,803	-11.3%	47,444	47,524	-0.2%
Construction						
Total Construction (thous. of dol.) 1	122,772.2	80,604.4	-34.3%	85,276.4	74,818.8	14.0%
Residential	43,651.4	46,391.4	6.3%	43,276.3	35,504.5	21.9%
Nonresidential	40,228.5	20,233.7	-49.7%	27,789.9	24,255.9	14.6%
Additions, Alterations, and Conversions	38,892.3	13,979.3	-64.1%	14,210.3	15,058.4	-5.6%
Total Permit Construction (thous. of dol.) 2	105,477.3	154,762.1	46.7%	103,305.1	78,607.9	31.4%
Residential	43,891.6	51,801.0	18.0%	46,942.9	36,379.4	29.0%
Nonresidential	45,793.3	40,061.3	-12.5%	37,059.2	28,293.4	31.0%
Additions, Alterations, and Repairs	15,792.4	62,899.8	298.3%	19,303.0	13,935.0	38.5%
New Dwelling Units (no.)	563	605	7.5%	570	462	23.3%
Employment						
Civilian Labor Force (thous.)	809.0	817.5	1.1%	798.6	781.2	2.2%
Total Employed Persons	775.4	783.2	1.0%	763.4	744.8	2.5%
Unemployed Persons	33.6	34.3	2.1%	35.2	36.0	-2.2%
Percent Total Labor Force	4.2	4.2	0.0%	4.4	4.7	-5.7%
Employees on Nonagricultural Payrolls (thous. of jobs)	703.8	736.2	4.6%	715.1	682.8	4.7%
Manufacturing	104.6	108.0	3.3%	105.1	102.3	2.7%
Mining	8.4	8.6	2.4%	8.6	7.9	7.8%
Contract Construction	28.7	29.8	3.8%	26.9	25.7	4.4%
Transportation, Communication, and Utilities	41.5	43.2	4.1%	42.5	40.5	4.9%
Wholesale Trade	39.3	40.2	2.3%	39.9	37.9	5.1%
Retail Trade	130.1	138.1	6.1%	133.9	125.7	6.5%
Finance, Insurance, and Real Estate	33.7	34.6	2.7%	33.9	33.3	1.8%
Services 3	171.8	184.8	7.6%	175.8	164.1	7.1%
Federal Government	40.2	39.1	-2.7%	40.2	40.0	0.5%
State Government 4	38.4	40.0	4.2%	41.5	39.7	4.7%
Local Government 4	67.1	69.8	4.0%	67.0	65.7	2.0%
Average Weekly Hours						
Manufacturing	39.9	40.2	0.8%	40.0	40.1	-0.2%
Mining	41.6	47.4	13.9%	42.8	40.7	5.2%
Wholesale Trade	37.6	38.7	2.9%	37.1	37.6	-1.2%
Retail Trade	28.0	27.0	-3.6%	26.8	27.4	-2.1%
Amount of Unemployment Compensation (thous. of dol.)	3,483.3	3,104.8	-10.9%	4,874.1	5,176.4	-5.8%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,184.7	1,576.4	-27.8%	1,898.0	2,250.9	-15.7%
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	78,971.2	79,396.0p	0.5%	163,284.3	155,957.9	4.7%
Sales and Use Tax	556.9	2,875.0p	416.3%	58,958.0	55,990.7	5.3%
Motor Fuel Tax	12,537.9	11,396.3p	-9.1%	10,947.8	11,822.7	-7.4%
Individual Income Tax	42,483.0	42,523.2p	0.1%	54,558.9	52,306.5	4.3%
Corporation Franchise Tax	16,374.4	6,574.7p	-59.8%	2,918.4	7,910.5	-63.1%
Production						
Crude Oil to Refineries (thous. of bbls.)	3,479.8	NA	NA	NA	4,110.3	NA
Crude Oil (thous. of bbls.)	2,349.7	2,209.8	-6.0%	2,311.0	2,423.8	-4.7%
Natural Gas (mil. of cu. ft.)	22,954.7	26,861.2	17.0%	25,680.6	22,910.8	12.1%
Coal (thous. short tons)	1,763.0	1,837.0	4.2%	1,908.5	1,596.0	19.6%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	957,536	950,450	-0.7%	1,006,025	956,175	5.2%
Highway Traffic Count Across State Lines	41,318	44,666	8.1%	43,281	37,397	15.7%
Transient Room Taxes (thous. of dol.)	-1.1	3.3p	-400.0%n	671.1	546.1	22.9%
Visits, State, Nat'l. Parks, Monuments (thous.)	1,556.6	1,493.4	-4.1%	1,111.1	1,107.7	0.3%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	503,001	522,945	4.0%	512,579	497,047	3.1%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	186,485	197,664	6.0%	192,043	185,044	3.8%
Electric Customers (Residential)	483,809	491,531	1.6%	488,929	482,402	1.4%
Electric Customers (Commercial)	48,777	49,822	2.1%	49,421	47,816	3.4%
Natural Gas Customers (Residential & Commercial)	471,469	485,166	2.9%	483,499	469,294	3.0%
Natural Gas Customers (Industrial)	568	577	1.6%	570	563	1.4%

Utah Business Statistics

UTAH DATA	Sept. 1989	Sept. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	57.9r	59.8p	3.3%	58.2	55.9	4.2%
Unemployment Rate	4.6r	4.5	-2.2%	4.2	4.2	-0.6%
Auth. Permit Construction (thous. of dol.)	9,833.0	12,083.4	22.9%	10,791.4	9,269.4	16.4%
New Dwelling Units (no.)	71	85	19.7%	77	66	17.2%
Postal Receipts (thous. of dol.)	582.2	581.6	0.1%	641.7	563.6	13.9%
Electric Customers (Residential)	49,335	50,003	1.4%	49,805	48,754	2.2%
Electric Customers (Commercial)	3,632	3,621	-0.3%	3,669	3,591	2.2%
Natural Gas Customers (Residential)	51,670	52,886	2.4%	52,667	51,508	2.2%
Natural Gas Customers (Industrial)	56	57	1.8%	56	55	2.0%
Telephone Lines in Service (Mt. Bell)(Residential)	57,454	60,927	6.0%	59,506	56,516	5.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,106	13,015	7.5%	12,636	11,820	6.9%
Salt Lake County						
Non-Ag. Employment (thous.)	357.7r	374.3p	4.6%	364.8	349.2	4.5%
Unemployment Rate	4.1r	3.9	-4.9%	3.9	4.2	-6.9%
Auth. Permit Construction (thous. of dol.)	52,687.7	97,467.1	85.0%	47,662.5	34,064.1	39.9%
New Dwelling Units (no.)	190	212	11.6%	198	165	19.4%
Postal Receipts (thous. of dol.)	7,617.0	7,693.3	1.0%	8,034.2	8,238.7	-2.5%
Electric Customers (Residential)	242,380	246,521	1.7%	245,762	242,440	1.4%
Electric Customers (Commercial)	20,821	21,089	1.3%	21,124	20,791	1.6%
Natural Gas Customers (Residential)	223,253	227,834	2.1%	227,641	223,704	1.8%
Natural Gas Customers (Industrial)	245	246	0.4%	245	241	1.8%
Telephone Lines in Service (Mt. Bell)(Residential)	236,663	246,110	4.0%	241,317	233,760	3.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	113,690	119,509	5.1%	116,625	112,399	3.8%
Utah County						
Non-Ag. Employment (thous.)	90.0r	96.8p	7.6%	91.1	85.4	6.6%
Unemployment Rate	4.1r	3.8	-7.3%	3.8	4.1	-7.5%
Auth. Permit Construction (thous. of dol.)	13,353.5	12,603.2	-4.9%	14,584.8	12,621.9	15.6%
New Dwelling Units (no.)	77	94	22.1%	102	72	41.3%
Postal Receipts (thous. of dol.)	1,480.2	NA	NA	NA	1,367.6	NA
Electric Customers (Residential)	53,322	53,777	0.9%	53,295	52,962	0.6%
Electric Customers (Commercial)	6,735	7,523	11.7%	6,989	6,082	14.9%
Natural Gas Customers (Residential)	62,615	64,339	2.8%	64,177	62,781	2.2%
Natural Gas Customers (Industrial)	73	74	1.4%	74	73	0.9%
Telephone Lines in Service (Mt. Bell)(Residential)	66,845	68,248	2.1%	66,774	65,972	1.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	20,074	21,356	6.4%	20,473	21,081	-2.9%
Weber County						
Non-Ag. Employment (thous.)	63.9r	68.1p	6.6%	66.5	63.6	4.6%
Unemployment Rate	5.8r	6.3	8.6%	5.5	5.5	-0.2%
Auth. Permit Construction (thous. of dol.)	8,578.0	5,491.6	-36.0%	7,103.0	5,579.8	27.3%
New Dwelling Units (no.)	56	43	-23.2%	43	45	-4.6%
Postal Receipts (thous. of dol.)	708.8	656.6	-7.4%	716.8	680.2	5.4%
Electric Customers (Residential)	54,142	54,956	1.5%	54,716	54,061	1.2%
Electric Customers (Commercial)	5,036	5,164	2.5%	5,086	4,991	1.9%
Natural Gas Customers (Residential)	50,288	51,211	1.8%	51,157	50,399	1.5%
Natural Gas Customers (Industrial)	85	81	-4.7%	83	85	-1.9%
Telephone Lines in Service (Mt. Bell)(Residential)	47,605	47,390	-0.5%	47,117	47,159	-0.1%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,318	13,373	8.6%	12,982	12,184	6.5%

1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
p	Preliminary Data
n	Not Meaningful Due to Negative Data
r	Revised
f	Forecast

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
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NATIONAL DATA	Sept. 1989	Sept. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,238.6	5,520.6	5.4%	5,407.2	5,130.9	5.4%
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,411.6	4,699.4	6.5%	4,583.7	4,313.5	6.3%
Industrial Production Indexes (seasonally adjusted) (1987=100)	108.2	110.5	%	109.1	107.8	1.2%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	515.0	532.5	3.4%	530.0	493.1	7.5%
Net Exports of Goods and Services (bil.) (qtly.)	–49.3	–39.3	–20.3%	–32.4	–54.9	–41.0%
Exports of Goods and Services (bil.) (qtly.)	623.7	667.7	7.1%	657.9	611.3	7.6%
Imports of Goods and Services (bil.) (qtly.)	673.0	706.9	5.0%	690.2	666.2	3.6%
Index of Leading Indicators (1982=100)	144.9	143.3	–1.1%	145.0	144.8	0.2%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	125.0	132.7	6.2%	128.7	122.6	5.0%
CPI-U (All Urban Consumers) Food & Beverages	125.9	133.0	5.6%	130.4	123.3	5.7%
CPI-U (All Urban Consumers) Housing	124.3	130.5	5.0%	127.1	121.8	4.3%
CPI-U (All Urban Consumers) Transportation	113.7	123.0	8.2%	117.6	113.0	4.1%
CPI-U (All Urban Consumers) Medical Care	151.7	165.8	9.3%	159.2	146.3	8.8%
CPI-U (All Urban Consumers) Energy	95.9	108.8	13.5%	97.8	93.2	4.9%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	113.5	120.3	6.0%	117.2	112.2	4.5%
GNP Price Deflator (1982=100) (qtly.)	126.8	132.3	4.3%	130.2	125.2	4.0%
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.0	125.0	0.8%	124.7	123.4	1.1%
Total Civilian Employment (mil.)	117.4	117.9	0.4%	118.0	116.9	1.0%
Unemployment Rate	5.3	5.7	7.5%	5.4	5.3	1.9%
Construction						
Total Construction (mil. of dol.)	25,267.0	19,248.0	–23.8%	19.927.7	22,240.7	–10.4%
Residential	10,600.0	8,463.0	–20.2%	9,228.2	10,279.9	–10.2%
Nonresidential	10,119.0	7,173.0	–29.1%	6,923.2	7,928.0	–12.7%
Non-Building	4,548.0	3,612.0	–20.6%	3,776.3	4,032.8	–6.4%
New Dwelling Units (no.)	119,178	90,578	–24.0%	99,663	117,777	–15.4%
Interest Rates						
Federal Funds Rate	9.02	8.20	–9.1%	8.32	9.18	–9.4%
Short Term (3-month Treasury bill rate)	7.72	7.38	–4.4%	7.66	8.13	–5.7%
Long Term (30-year Treasury bond yields)	8.31	9.11	9.6%	8.60	8.83	–2.6%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	10.50	10.00	–4.8%	10.13	10.79	–6.1%
Mortgage Rates (new homes)	9.87	9.60	–2.7%	9.73	9.56	1.7%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

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Utah Economic and
Business Review

Volume 51
Numbers 1 and 2
January / February
1991

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1990 Population Estimates for Utah and Its Counties

Brad T. Barber and Jeanine M. Taylor*

According to the estimates from the Population Estimates Committee, the population of Utah reached 1,729,000 as of July 1, 1990, which represents an increase of 24,000, or 1.4 percent over the revised 1989 figure of 1,705,000. This is the largest percent increase in the last six years. Utah's estimate includes the preliminary natural increase of 26,619 persons, and an implied net out-migration of almost 1,900.

The April 1, 1990 Census yielded a count of 1,722,850 people in the State of Utah. A July 1, 1990 estimate was then prepared by the Population Estimates Committee. It might be asked why a population estimate was prepared during a Census year. There were two main reasons for producing this estimate: 1) to maintain a comparable time series (intercensal estimates are centered on July 1 of each year); and 2) to examine population changes in the past year (1989-90).

Thirteen counties in Utah gained population in the last year. Nine counties declined in population, and seven counties had no appreciable change in population over the last year. Most of Utah's population increase occurred in two counties: Salt Lake (9,000) and Utah (8,000). These two counties accounted for over 70 percent of the state's increase in 1990. Daggett county had the largest growth rate for the year (7.7 percent); however, because of Daggett county's size, the actual increase was only 50 people. Washington and Summit counties tied for second fastest growth in the state, with 4 percent each, followed by Utah and Iron counties, with 3.1 and 2.5 percent respectively.

Natural increase, which is the measure of births minus deaths, was the second lowest number since 1976. The period from July 1, 1989 through June 30, 1990, showed both births and deaths staying fairly constant compared to the previous year.

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Utah experienced substantial employment growth during 1989-90, and it is often assumed that given this increase, Utah should be experiencing a net in-migration of population. This is not the case for the past year. While there has been a dramatic decrease in net out-migration (from -6,300 in 1989 to -1,900 in 1990), there has still been net out-migration in the state in the past year.

Table 1 displays, county by county, the natural increase and implied net migration resulting from the revised 1989 and preliminary 1990 population estimates. It is important to note that while there has been a substantial decrease in the net out-migration for the state, this positive change carries over to only a very few counties. Only nine counties experienced any net in-migration in the last year, and of these, only five experienced more than a net increase of 60 people. The significance of this is that population growth resulting from migration can mainly be imputed to three counties: Summit (+433), Utah (+2,153), and Washington (+1,326). While the net out-migration is expected to decline further this year, it must be noted that the state-level positive changes do not necessarily translate into state-wide changes of the same magnitude.

Growth in the Decade of the 1980s

Utah's population increased by 261,813 (from 1,461,037 on April 1, 1980 to 1,722,850 on April 1, 1990) during the decade of the 1980s. This increase was due entirely to births in the state. Since natural increase for the decade was 292,000, there is an implied net out-migration of over 30,000 for the decade of the 1980s.

The metropolitan counties of the Wasatch Front -- Davis, Utah, Salt Lake and Weber -- grew by 28.3, 20.9, 17.3 and 9.5 percent, respectively, in the 1980s. The state growth for the same period was 17.9 percent. These metropolitan counties also remained the four largest in the state, accounting for over 75 percent of total state population. Salt Lake county remains the largest county in the state, accounting for 42 percent of the total state population.

The fastest growing counties -- Washington and Summit - grew by 86.3 and 52.2 percent respectively. This growth for Washington county translates into an annual average rate of change of over 6 percent per year.

Six counties (Piute, Carbon, Emery, Daggett, Rich and Grand) actually lost population over the last ten years. Each of the counties which experienced loss was heavily dependent on energy-related development, which declined dramatically in the 1980s.

The Demographic and Economic Analysis Section of the State Office of Planning and Budget has prepared the first in a series of Census Briefs: "Cities and Counties of Utah". This report contains more analysis regarding county growth in the 1980s. The series of briefs is designed to analyze specific data derived from the 1990 Census of Population and Housing. Copies of this report can be obtained by calling 801-538-1036.

Methodology for Estimating Population

In order to produce a 1990 estimate consistent with the Census count, the Population Estimates Committee first produced a 1990 estimate using an average of the two standard methodologies of School Enrollment and L.D.S. Membership Methods. The 1990 methodologies used the 1989 estimate produced last year by the Committee as their origin. The Committee then made the assumption that the annual growth rate implied by averaging the two methodologies was reliable. The 1989-90 growth rates, by county, were then applied to the 1990 Census counts by county. To establish a 1989 revised estimate, 75 percent of the 1989-90 growth rate was subtracted from the April 1 Census; while 25 percent of the same growth rate was added on to the April 1 count. The result of this procedure was that a 1.4 percent growth was maintained for the state for the past year, while 'centering' on the actual population count as of April 1.

The school enrollment method compares a county's survived enrollment in grades 1-8 for the previous year to grades 2-9 in the present years. The difference between the two enrollment totals is taken to be net student migration for the county. Total net migration for the county is then derived by multiplying the county's student migration estimate by the county-specific total population-to-student ratio. This ratio is defined as the total population

Table 1

Revised 1989 and Preliminary 1990 Population Estimates By County

County	1989 Revised Estimate	1990 Natural Increase	Net Migration	1990 Preliminary Estimate	1989 Revised Estimate	1990 Preliminary Estimate	1989-90 Growth Rate
Beaver	4,774	25	(27)	4,772	4,750	4,750	0.0
Box Elder	36,472	497	(476)	36,493	36,500	36,500	0.0
Cache	69,182	1,326	11	70,519	69,200	70,500	1.9
Carbon	20,415	152	(392)	20,175	20,400	20,200	-1.0
Daggett	649	8	47	704	650	700	7.7
Davis	185,925	3,164	(619)	188,470	186,000	188,000	1.1
Duchesne	12,773	169	(340)	12,602	12,800	12,600	-1.6
Emery	10,438	113	(253)	10,298	10,400	10,300	-1.0
Garfield	4,000	32	(64)	3,968	4,000	3,950	-1.3
Grand	6,700	45	(150)	6,595	6,700	6,600	-1.5
Iron	20,425	312	173	20,910	20,400	20,900	2.5
Juab	5,887	40	(131)	5,796	5,900	5,800	-1.7
Kane	5,221	53	(122)	5,152	5,200	5,150	-1.0
Millard	11,338	127	(141)	11,324	11,300	11,300	0.0
Morgan	5,433	66	59	5,558	5,450	5,550	1.8
Piute	1,307	4	(48)	1,263	1,300	1,250	-3.8
Rich	1,741	30	(44)	1,727	1,750	1,750	0.0
Salt Lake	719,255	10,842	(1,933)	728,164	719,000	728,000	1.3
San Juan	12,618	190	(191)	12,617	12,600	12,600	0.0
Sanpete	15,998	156	182	16,336	16,000	16,300	1.9
Sevier	15,421	123	(118)	15,426	15,400	15,400	0.0
Summit	15,053	199	433	15,685	15,100	15,700	4.0
Tooele	26,434	292	(58)	26,668	26,400	26,700	1.1
Uintah	22,163	307	(250)	22,220	22,200	22,200	0.0
Utah	257,912	5,595	2,153	265,660	258,000	266,000	3.1
Wasatch	9,978	128	-14	10,120	10,000	10,100	1.0
Washington	47,159	576	1,326	49,061	47,200	49,100	4.0
Wayne	2,204	16	(56)	2,164	2,200	2,150	-2.3
Weber	157,510	2,032	(835)	158,707	158,000	159,000	0.6
	1,704,385	26,619	(1,853)	1,729,151	1,705,000	1,729,000*	1.4

* Note: Totals may not add due to rounding

Source: Utah Population Estimates Committee estimate for the county for the previous year divided by the previous year's grades 1-8 school enrollment. The second component of the school enrollment method is the calculation of natural increase in the county. Natural increase for any year is defined as the number of births minus the number of deaths. This method is limited in estimating migration among the retired, college students, single persons and other groups that are not represented in school enrollment estimates.

The L.D.S. membership method uses a total population to L.D.S. membership ratio which is obtained by dividing the previous year's population of that year's L.D.S. membership. This ratio is applied to the current L.D.S. membership to obtain a county population estimate. This method is relatively accurate in areas with high proportions of L.D.S. membership and low migration rates.

Intercensal Population Estimates for the 1980s

The Population Estimates Committee is in the process of preparing a revised set of intercensal estimates for the 1980s based on the 1990 Census counts. This process will take a number of months, and will make use of detailed Census data as it becomes available. It is possible that when the set of estimates is completed, the 1989 estimate may be slightly different, but no significant changes are expected.

The Estimates Committee will also be conducting an extensive evaluation of its methodologies. This will result in improvements from either the updating or expanding of methods to better estimate population in Utah in the 1990s.

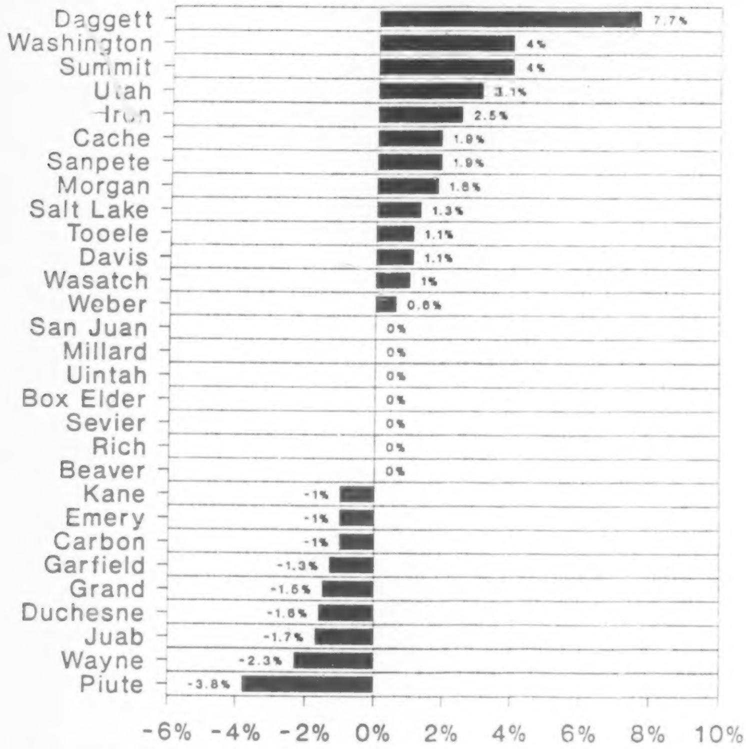
Table 2
Resident Utah Births, Deaths and Natural Increase
Calendar and Fiscal Years 1970-1989/90

	Calendar Year (year ending 12/31)			Fiscal Year (year ending 6/30)		
Year	Births	Deaths	Natural Increase	Births	Deaths	Natural Increase
1970	26,969	7,063	19,906	25,601	6,927	18,674
1971	27,552	7,245	20,307	27,407	7,207	20,200
1972	26,911	7,323	19,588	27,146	7,236	19,910
1973	27,978	7,573	20,405	27,562	7,517	20,045
1974	29,946	7,380	22,566	28,876	7,496	21,380
1975	31,667	7,519	24,148	30,566	7,515	23,051
1976	35,310	7,472	27,838	33,773	7,378	26,395
1977	37,956	7,612	30,344	36,709	7,595	29,114
1978	38,811	7,871	30,940	38,265	7,687	30,578
1979	41,078	7,871	33,207	40,134	7,846	32,288
1980	41,786	8,103	33,683	41,591	8,108	33,483
1981	41,286	8,263	33,023	41,511	8,112	33,399
1982	41,537	8,502	33,035	41,774	8,404	33,370
1983	39,441	8,484	30,957	40,557	8,346	32,211
1984	38,286	8,944	29,342	38,643	8,886	29,757
1985	37,441	9,044	28,397	37,508	8,923	28,585
1986	36,383	8,886	27,497	37,145	8,790	28,355
1987	35,285	9,055	26,230	35,469	8,813	26,656
1988	36,040	9,185	26,855	35,648	9,122	26,526
1989	35,541	9,223	26,318	35,549	8,916	26,633
1990	Na	Na	Na	35,569	8,950	26,619

Na: Not available

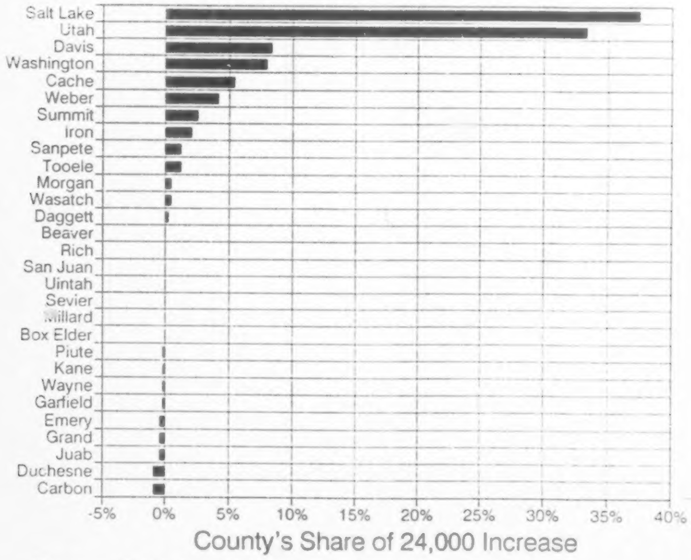
Source: Utah Population Estimates Committee.

1989-90 Growth Rate by County



Source: Utah Population Estimates Committee

Distribution of 1989-90 Growth by County



Source: Utah Population Estimates Committee

Selected 1990 Census Information for Eleven Coterminous Western States

Population Change by State -- 1970-1990

	1970 Census	1980 Census	1990 Resident Population
United States	203,302,031	226,504,825	248,709,873
Eleven Western States	33,765,747	41,799,718	51,127,810
Arizona	1,775,399	2,717,866	3,665,228
California	19,971,069	23,668,562	29,760,021
Colorado	2,209,596	2,888,834	3,294,394
Idaho	713,015	943,935	1,006,749
Montana	694,409	786,690	799,065
Nevada	488,738	799,184	1,201,833
New Mexico	1,017,055	1,299,968	1,515,069
Oregon	2,091,533	2,632,663	2,842,321
Utah	1,059,273	1,461,037	1,722,850
Washington	3,413,244	4,130,163	4,866,692
Wyoming	332,416	470,816	453,588

Percentage of Nation's Population

	1970	1980	1990
Eleven Western States	16.6	18.5	20.6
Arizona	0.9	1.2	1.5
California	9.8	10.4	12.0
Colorado	1.1	1.3	1.3
Idaho	0.4	0.4	0.4
Montana	0.3	0.3	0.3
Nevada	0.2	0.4	0.5
New Mexico	0.5	0.6	0.6
Oregon	1.0	1.2	1.1
Utah	0.5	0.6	0.7
Washington	1.7	1.8	2.0
Wyoming	0.2	0.2	0.2

Percentage of Eleven Western States' Population

	1970	1980	1990
Arizona	5.3	6.5	7.2
California	59.1	56.6	58.2
Colorado	6.5	6.9	6.4
Idaho	2.1	2.3	2.0
Montana	2.1	1.9	1.6
Nevada	1.4	1.9	2.4
New Mexico	3.0	3.1	3.0
Oregon	6.2	6.3	5.6
Utah	3.1	3.5	3.4
Washington	10.1	9.9	9.5
Wyoming	1.0	1.1	0.9

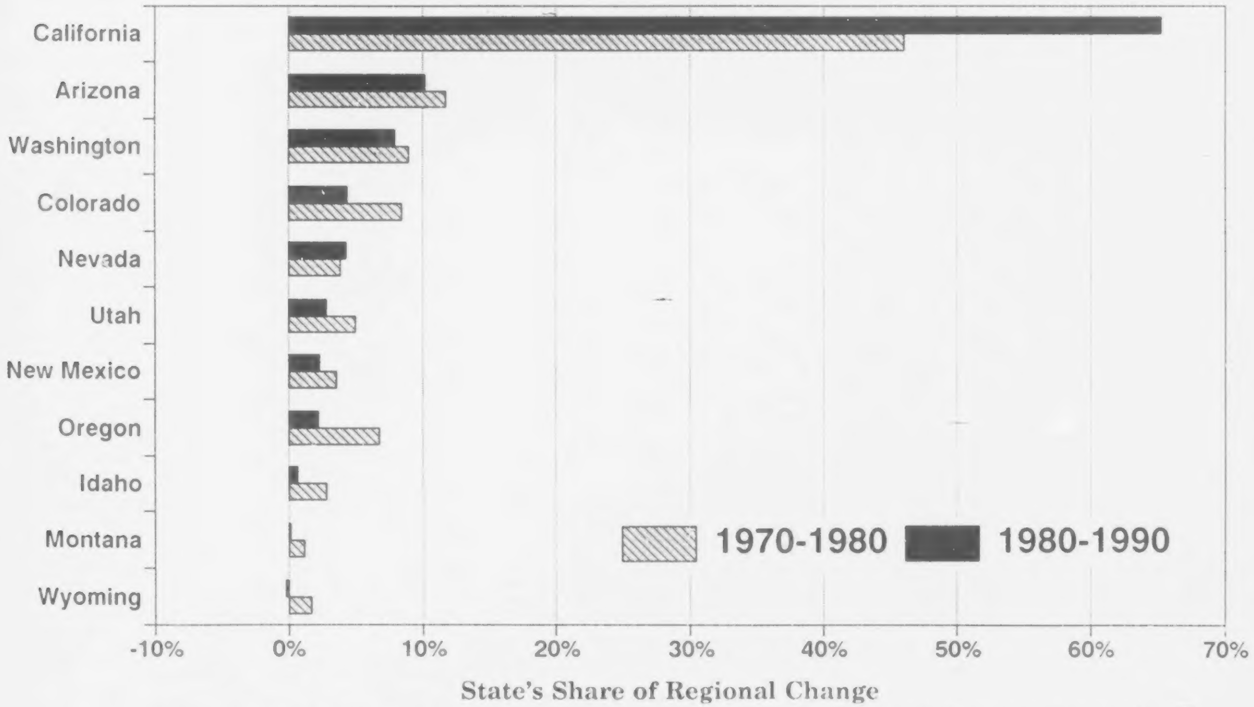
Source: U. S. Dept. of Commerce, Bureau of the Census, Census of Population, 1970, 1980, 1990, Washington, D.C.

Regional Changes and Share of Changes in Eleven Western States

	Changes in Population		State's Share of Change in Eleven Western States	
	1970-1980	1980-1990	1970-1980	1980-1990
United States	23,202,794	22,205,048		
Eleven Western States	8,033,971	9,328,092		
Arizona	942,467	947,362	11.73%	10.16%
California	3,697,493	6,091,459	46.02%	65.30%
Colorado	679,238	405,560	8.45%	4.35%
Idaho	230,920	62,814	2.87%	0.67%
Montana	92,281	12,375	1.15%	0.13%
Nevada	310,446	402,649	3.86%	4.32%
New Mexico	282,913	215,101	3.52%	2.31%
Oregon	541,130	209,658	6.74%	2.25%
Utah	401,764	261,813	5.00%	2.81%
Washington	716,919	736,529	8.92%	7.90%
Wyoming	138,400	(17,228)	1.72%	-0.18%

Source: U. S. Department of Commerce, Bureau of the Census, Census of Population, 1970, 1980, 1990, Washington, D.C.

State's Share of Change in Eleven Western States



Source: Calculated from data on page 6 by Bureau of Economic and Business Research.

Utah Business Statistics

UTAH DATA	Oct. 1989	Oct. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	58.0r	59.2f	2.1%	58.4	56.1	4.1%
Unemployment Rate	4.5r	4.3	-4.4%	4.2	4.2	0.8%
Auth. Permit Construction (thous. of dol.)	16,199.4	16,975.4	4.8%	10,856.0	10,019.3	8.4%
New Dwelling Units (no.)	88	105	19.3%	79	67	17.2%
Postal Receipts (thous. of dol.)	821.3	825.5	0.5%	642.1	594.5	8.0%
Electric Customers (Residential)	49,494	50,211	1.4%	49,865	48,858	2.1%
Electric Customers (Commercial)	3,636	3,741	2.9%	3,678	3,606	2.0%
Natural Gas Customers (Residential)	51,590	52,913	2.6%	52,777	51,607	2.3%
Natural Gas Customers (Industrial)	55	56	1.8%	56	55	1.8%
Telephone Lines in Service (Mt. Bell)(Residential)	57,638	61,062	5.9%	59,791	56,671	5.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,188	13,066	7.2%	12,709	11,870	7.1%
Salt Lake County						
Non-Ag. Employment (thous.)	357.9r	376.0f	5.1%	366.0	350.4	4.5%
Unemployment Rate	4.0r	4.1	2.5%	4.0	4.2	-5.6%
Auth. Permit Construction (thous. of dol.)	25,200.0	45,802.1	81.8%	49,379.3	33,435.[illegible]	47.7%
New Dwelling Units (no.)	152	234	53.9%	204	162	26.2%
Postal Receipts (thous. of dol.)	8,240.3	8,286.0	0.6%	8,038.0	8,213.0	-2.1%
Electric Customers (Residential)	243,658	247,887	1.7%	246,115	242,740	1.4%
Electric Customers (Commercial)	20,935	21,178	1.2%	21,144	20,832	1.5%
Natural Gas Customers (Residential)	223,405	227,897	2.0%	228,015	224,060	1.8%
Natural Gas Customers (Industrial)	244	245	0.4%	245	241	1.7%
Telephone Lines in Service (Mt. Bell)(Residential)	237,769	246,881	3.8%	242,076	234,269	3.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	113,677	119,830	5.4%	117,138	112,554	4.1%
Utah County						
Non-Ag. Employment (thous.)	91.2r	96.7f	6.0%	91.8	85.9	6.8%
Unemployment Rate	4.3r	4.1	-4.7%	3.8	4.1	-7.7%
Auth. Permit Construction (thous. of dol.)	11,183.4	25,346.7	126.6%	15,765.0	12,651.7	24.6%
New Dwelling Units (no.)	106	106	0.0%	102	74	38.4%
Postal Receipts (thous. of dol.)	1,590.0	1,752.0	10.2%	1,690.1	1,396.6	21.0%
Electric Customers (Residential)	53,750	56,878	5.8%	53,555	53,088	0.9%
Electric Customers (Commercial)	6,260	7,351	17.4%	7,080	6,099	16.1%
Natural Gas Customers (Residential)	62,893	64,486	2.5%	64,309	62,884	2.3%
Natural Gas Customers (Industrial)	73	74	1.4%	74	73	0.6%
Telephone Lines in Service (Mt. Bell)(Residential)	67,154	68,438	1.9%	66,881	66,089	1.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	19,636	21,483	9.4%	20,627	20,976	-1.7%
Weber County						
Non-Ag. Employment (thous.)	64.1r	68.2f	6.4%	66.6	63.7	4.5%
Unemployment Rate	5.7r	5.7	0.0%	5.5	5.4	1.2%
Auth. Permit Construction (thous. of dol.)	6,324.5	9,573.4	51.4%	7,373.7	5,516.0	33.7%
New Dwelling Units (no.)	38	60	57.9%	45	44	1.3%
Postal Receipts (thous. of dol.)	694.2	749.7	8.0%	721.4	683.0	5.6%
Electric Customers (Residential)	54,333	54,992	1.2%	54,771	54,132	1.2%
Electric Customers (Commercial)	5,036	5,126	1.8%	5,094	5,001	1.9%
Natural Gas Customers (Residential)	50,130	51,182	2.1%	51,244	50,461	1.6%
Natural Gas Customers (Industrial)	85	81	-4.7%	83	84	-2.2%
Telephone Lines in Service (Mt. Bell)(Residential)	47,752	47,469	-0.6%	47,093	47,242	-0.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,385	13,374	8.0%	13,064	12,206	7.0%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report.*
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
r	Revised
f	Forecast

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture.*
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report.*
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

Utah Business Statistics

UTAH DATA	Oct. 1989	Oct. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	22,965	NA	NA	NA	22,042	NA
New Corporations (no.)	430	546	27.0%	505	465	8.6%
New Car, Truck, and Motor Home Sales (no.)	4,685	5,426	15.8%	5,108	5,121	-0.3%
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	71.40	76.90	7.7%	75.83	71.63	5.9%
Lambs (cwt)	57.40	47.40	-17.4%	50.56	62.32	-18.9%
Milk Wholesale (cwt)	13.70	12.10	-11.7%	13.48	12.28	9.8%
Alfalfa Hay, Baled (per ton)	85.00	85.00	0.0%	84.92	83.42	1.8%
Cattle Slaughtered (live weight) (thous. of lbs.)	51,315	49,044	-4.4%	47,255	47,856	-1.3%
Construction						
Total Construction (thous. of dol.) 1	77,059.7	102,207.8	32.6%	87,372.1	75,292.3	16.0%
Residential	40,285.3	50,209.0	24.6%	44,103.3	35,642.1	23.7%
Nonresidential	24,081.1	34,418.5	42.9%	28,651.3	24,538.5	16.8%
Additions, Alterations, and Conversions	12,693.3	17,580.4	38.5%	14,617.6	15,111.7	-3.3%
Total Permit Construction (thous. of dol.) 2	85,729.6	120,042.9	40.0%	106,164.5	79,571.2	33.4%
Residential	40,918.5	55,881.3	36.6%	48,189.8	36,429.9	32.3%
Nonresidential	30,987.4	48,514.8	56.6%	38,519.8	29,299.0	31.5%
Additions, Alterations, and Repairs	13,823.7	15,646.8	13.2%	19,454.9	13,842.3	40.5%
New Dwelling Units (no.)	524	674	28.6%	582	462	25.9%
Employment						
Civilian Labor Force (thous.)	802.3	813.1	1.3%	799.6	783.9	2.0%
Total Employed Persons	770.6	781.3	1.4%	764.1	747.4	2.2%
Unemployed Persons	31.7	31.8	0.3%	35.5	36.1	-1.7%
Percent Total Labor Force	3.9	3.9	0.0%	4.4	4.7	-5.0%
Employees on Nonagricultural Payrolls (thous. of jobs)	705.1	737.0	4.5%	717.6	685.4	4.7%
Manufacturing	104.7	108.1	3.2%	105.4	102.6	2.7%
Mining	8.5	8.6	1.2%	8.6	8.0	7.2%
Contract Construction	27.8	29.3	5.4%	26.9	25.8	4.3%
Transportation, Communication, and Utilities	41.5	42.8	3.1%	42.6	40.6	4.9%
Wholesale Trade	39.0	39.8	2.1%	40.0	38.2	4.7%
Retail Trade	130.8	138.0	5.5%	134.5	126.3	6.5%
Finance, Insurance, and Real Estate	33.5	34.1	1.8%	34.0	33.3	2.1%
Services 3	170.7	184.3	8.0%	176.9	165.0	7.2%
Federal Government	39.6	38.6	-2.5%	40.0	40.0	0.0%
State Government 4	41.2	42.4	2.9%	41.6	39.8	4.5%
Local Government 4	67.8	70.9	4.6%	67.3	65.8	2.2%
Average Weekly Hours						
Manufacturing	40.4	39.9	-1.2%	39.9	40.0	-0.2%
Mining	40.7	44.9	10.3%	43.2	40.8	5.9%
Wholesale Trade	38.0	37.1	-2.4%	37.2	37.6	-1.2%
Retail Trade	27.5	26.6	-3.3%	26.8	27.4	-2.4%
Amount of Unemployment Compensation (thous. of dol.)	3,374.3	3,741.2	10.9%	4,904.7	5,156.7	-4.9%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,175.0	1,181.4	-45.7%	1,784.5	2,231.9	-20.0%
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	321,660.4	NA	NA	NA	172,888.7	NA
Sales and Use Tax	171,813.9	NA	NA	NA	67,620.5	NA
Motor Fuel Tax	11,792.4	NA	NA	NA	11,676.1	NA
Individual Income Tax	66,016.2	NA	NA	NA	53,648.1	NA
Corporation Franchise Tax	-6,822.2	NA	NA	NA	6,535.5	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,618.5	NA	NA	NA	4,041.2	NA
Crude Oil (thous. of bbls.)	2,409.2	2,295.4	-4.7%	2,301.6	2,397.5	-4.0%
Natural Gas (mil. of cu. ft.)	23,893.1	28,297.7	18.4%	26,047.6	23,033.8	13.1%
Coal (thous. short tons)	1,775.0	2,171.0	22.3%	1,941.5	1,628.3	19.2%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	952,412	903,789	-5.1%	1,001,973	969,175	3.4%
Highway Traffic Count Across State Lines	41,914	44,930	7.2%	43,532	37,506	16.1%
Transient Room Tax (thous. of dol.)	1,557.9	NA	NA	NA	652.9	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	973.0	978.9	0.6%	1,111.6	1,105.1	0.6%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	506,176	524,531	3.6%	514,046	498,201	3.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	186,334	198,211	6.4%	193,010	185,291	4.2%
Electric Customers (Residential)	485,422	NA	NA	NA	483,078	NA
Electric Customers (Commercial)	48,252	NA	NA	NA	47,925	NA
Natural Gas Customers (Residential & Commercial)	472,550	485,128	2.7%	484,547	470,548	3.0%
Natural Gas Customers (Industrial)	565	576	1.9%	571	563	1.4%

Utah Business Statistics

UTAH DATA	Nov 1989	Nov 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	22,965	NA	NA	NA	22,184	NA
New Corporations (no.)	393	382	−2.8%	504	463	8.8%
New Car, Truck, and Motor Home Sales (no.)	4,396	4,596	4.5%	5,124	5,091	0.6%
Agriculture						
Average Prices Received by Farmers (dol.)						
Beef Steers and Heifers (cwt) (live wt.)	72.70	78.10	7.4%	76.28	72.00	5.9%
Lambs (cwt)	53.30	41.20	−22.7%	49.55	61.57	−19.5%
Milk Wholesale (cwt)	14.40	11.70	−18.8%	13.25	12.47	6.0%
Alfalfa Hay, Baled (per ton)	85.00	86.00	1.2%	85.00	84.08	1.1%
Cattle Slaughtered (live weight) (thous. of lbs.)	48,122	46,545	−3.3%	47,124	48,277	−2.4%
Construction						
Total Construction (thous. of dol.) 1	76,618.5	58,001.4	−24.3%	85,820.9	76,668.7	11.9%
Residential	33,037.0	33,096.8	0.2%	44,108.2	36,025.6	22.4%
Nonresidential	24,083.0	16,728.1	−30.5%	28,038.4	24,606.1	13.9%
Additions, Alterations, and Conversions	19,514.6	8,176.4	−58.1%	13,674.4	16,037.0	−14.7%
Total Permit Construction (thous. of dol.) 2	63,816.0	72,777.3	13.2%	105,244.6	81,629.5	28.9%
Residential	35,743.0	38,051.3	6.5%	48,382.2	37,049.1	30.6%
Nonresidential	32,073.0	17,438.9	−46.6%	37,250.2	30,188.8	23.4%
Additions, Alterations, and Repairs	15,306.9	17,287.1	12.9%	19,612.3	14,391.8	36.3%
New Dwelling Units (no.)	428	500	16.8%	588	466	26.2%
Employment						
Civilian Labor Force (thous.)	804.2	809.0	0.6%	800.2	786.8	1.7%
Total Employed Persons	773.1	778.7	0.7%	764.5	749.8	2.0%
Unemployed Persons	31.1	30.7	−1.3%	35.7	36.3	−1.7%
Percent Total Labor Force	3.9	3.8	−2.6%	4.5	4.7	−4.3%
Employees on Nonagricultural Payrolls (thous. of jobs)	714.1	744.7	4.3%	720.1	688.4	4.6%
Manufacturing	105.2	109.1	3.7%	105.7	102.9	2.8%
Mining	8.6	8.7	1.2%	8.6	8.1	6.6%
Contract Construction	27.4	29.4	7.3%	27.0	25.8	4.4%
Transportation, Communications, and Utilities	42.0	43.2	2.9%	42.7	40.7	4.8%
Wholesale Trade	39.9	39.6	−0.8%	40.0	38.4	4.3%
Retail Trade	136.1	141.7	4.1%	135.1	127.1	6.3%
Finance, Insurance, and Real Estate	33.6	34.4	2.4%	34.1	33.3	2.2%
Services 3	172.0	186.1	8.2%	178.1	166.1	7.2%
Federal Government	39.3	37.7	−4.1%	39.8	40.0	−0.6%
State Government 4	42.1	42.9	1.9%	41.7	40.0	4.3%
Local Government 4	68.6	71.9	4.8%	67.6	66.0	2.5%
Average Weekly Hours						
Manufacturing	40.9	40.3	−1.5%	39.9	40.0	−0.3%
Mining	40.5	45.8	13.1%	43.6	40.9	6.6%
Wholesale Trade	36.4	37.3	2.5%	37.4	37.6	−0.6%
Retail Trade	27.2	26.5	−2.6%	26.7	27.4	−2.6%
Amount of Unemployment Compensation (thous. of dol.)	5,145.6	5,983.8	16.3%	4,951.2	5,057.0	−2.1%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,133.5	1,165.9	−45.4%	1,703.9	2,211.7	−23.0%
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	76,823.2	NA	NA	NA	157,661.9	NA
Sales and Use Tax	1,287.1	NA	NA	NA	56,811.2	NA
Motor Fuel Tax	11,114.3	NA	NA	NA	11,697.6	NA
Individual Income Tax	42,163.1	NA	NA	NA	51,704.0	NA
Corporation Franchise Tax	560.1	NA	NA	NA	6,592.4	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,537.9	NA	NA	NA	3,969.3	NA
Crude Oil (thous. of bbls.)	2,191.5	2,246.3	2.5%	2,306.1	2,366.2	−2.5%
Natural Gas (mil. of cu. ft.)	22,845.0	27,333.4	19.6%	26,421.7	22,947.2	15.1%
Coal (thous. short tons)	1,875.0	1,995.0	6.4%	1,951.5	1,664.4	17.2%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	907,377	854,304	−5.8%	997,550	980,991	1.7%
Highway Traffic Count Across State Lines	41,914	44,930	7.2%	43,784	38,116	14.9%
Transient Room Tax (thous. of dol.)	519.9	NA	NA	NA	556.0	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	449.1	464.3	3.4%	1,112.9	1,109.9	0.3%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	507,397	526,238	3.7%	515,616	499,384	3.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	186,938	198,788	6.3%	193,998	185,595	4.5%
Electric Customers (Residential)	485,653	NA	NA	NA	483,629	NA
Electric Customers (Commercial)	48,423	NA	NA	NA	48,036	NA
Natural Gas Customers (Residential & Commercial)	477,879	490,598	2.7%	485,607	472,026	2.9%
Natural Gas Customers (Industrial)	567	576	1.6%	572	564	1.4%

Utah Business Statistics —

UTAH DATA	Nov. 1989	Nov. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	57.8r	60.8	5.2%	58.8	56.4	4.2%
Unemployment Rate	4.3r	4.5	4.7%	4.3	4.3	–0.2%
Auth. Permit Construction (thous. of dol.)	7,457.5	6,929.3	–7.1%	10,812.0	10,020.5	7.9%
New Dwelling Units (no.)	67	59	–11.9%	78	69	14.0%
Postal Receipts (thous. of dol.)	662.8	644.3	–2.8%	640.5	611.1	4.8%
Electric Customers (Residential)	49,357	50,414	2.1%	49,953	48,962	2.0%
Electric Customers (Commercial)	3,598	3,720	3.4%	3,688	3,610	2.2%
Natural Gas Customers (Residential)	52,073	53,389	2.5%	52,887	51,719	2.3%
Natural Gas Customers (Industrial)	55	56	1.8%	56	55	1.7%
Telephone Lines in Service (Mt. Bell)(Residential)	57,708	61,177	6.0%	60,080	56,824	5.7%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,296	13,102	6.6%	12,776	11,930	7.1%
Salt Lake County						
Non-Ag. Employment (thous.)	363.6r	378.7	4.2%	366.9	351.7	4.3%
Unemployment Rate	3.9r	3.7	–5.1%	4.0	4.2	–5.0%
Auth. Permit Construction (thous. of dol.)	28,438.7	21,942.6	–22.8%	48,838.0	33,865.6	44.2%
New Dwelling Units (no.)	139	145	4.3%	205	162	26.6%
Postal Receipts (thous. of dol.)	8,470.6	8,273.6	–2.3%	8,021.6	8,195.3	-2.1%
Electric Customers (Residential)	244,266	248,036	1.5%	246,429	242,995	1.4%
Electric Customers (Commercial)	20,869	21,231	1.7%	21,174	20,868	1.5%
Natural Gas Customers (Residential)	225,658	229,963	1.9%	228,374	224,500	1.7%
Natural Gas Customers (Industrial)	245	245	0.0%	245	242	1.4%
Telephone Lines in Service (Mt. Bell)(Residential)	238,364	247,574	3.9%	242,844	234,799	3.4%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	113,935	119,919	5.3%	117,637	112,747	4.3%
Utah County						
Non-Ag. Employment (thous.)	93.0r	99.4	6.9%	92.6	86.5	7.1%
Unemployment Rate	4.2r	4.7	11.9%	3.9	4.2	–7.0%
Auth. Permit Construction (thous. of dol.)	10,037.4	23,349.1	132.6%	16,874.4	12,788.1	32.0%
New Dwelling Units (no.)	55	121	120.0%	107	75	43.6%
Postal Receipts (thous. of dol.)	1,636.9	1,732.8	5.9%	1,698.1	1,421.6	19.4%
Electric Customers (Residential)	52,849	56,615	7.1%	53,869	53,133	1.4%
Electric Customers (Commercial)	6,397	7,504	17.3%	7,172	6,128	17.0%
Natural Gas Customers (Residential)	63,431	65,099	2.6%	64,448	63,020	2.3%
Natural Gas Customers (Industrial)	74	75	1.4%	74	74	0.3%
Telephone Lines in Service (Mt. Bell)(Residential)	67,202	68,622	2.1%	67,000	66,197	1.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	19,723	21,694	10.0%	20,791	20,870	–0.4%
Weber County						
Non-Ag. Employment (thous.)	64.7r	66.1	2.2%	66.6	63.9	4.3%
Unemployment Rate	5.5r	5.7	3.6%	5.5	5.4	2.0%
Auth. Permit Construction (thous. of dol.)	11,198.7	3,508.6	–68.7%	6,732.9	6,080.4	10.7%
New Dwelling Units (no.)	44	23	–47.7%	43	44	–1.7%
Postal Receipts (thous. of dol.)	702.7	816.8	16.2%	730.9	683.6	6.9%
Electric Customers (Residential)	54,421	55,145	1.3%	54,831	54,199	1.2%
Electric Customers (Commercial)	5,052	5,132	1.6%	5,100	5,015	1.7%
Natural Gas Customers (Residential)	50,737	51,588	1.7%	51,315	50,561	1.5%
Natural Gas Customers (Industrial)	84	81	–3.6%	82	84	–2.3%
Telephone Lines in Service (Mt. Bell)(Residential)	47,803	47,590	–0.4%	47,075	47,323	–0.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,424	13,370	7.6%	13,143	12,232	7.4%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report.*
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
r	Revised

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture.*
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report.*
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

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NATIONAL DATA	Nov. 1989	Nov. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,289.3	5,518.9	4.3%	5,443.9	5,177.5	5.1%
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,470.0	4,713.7	5.5%	4,624.8	4,359.8	6.1%
Industrial Production Indexes (seasonally adjusted) (1987=100)	108.1	107.8	-0.3%	109.2	108.0	1.2%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	519.6	532.8	2.5%	532.8	501.7	6.2%
Net Exports of Goods and Services (bil.) (qtly.)	–35.3	-55.9	58.4%	–36.3	–49.0	-25.9%
Exports of Goods and Services (bil.) (qtly.)	642.8	687.7	7.0%	666.6	621.3	7.3%
Imports of Goods and Services (bil.) (qtly.)	678.1	743.7	9.7%	703.0	670.3	4.9%
Index of Leading Indicators (1982=100)	144.6	140.0	-3.2%	144.4	144.9	–0.3%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	125.9	133.8	6.3%	130.0	123.5	5.3%
CPI-U (All Urban Consumers) Food & Beverages	126.7	133.7	5.5%	131.5	124.3	5.8%
CPI-U (All Urban Consumers) Housing	124.5	130.4	4.7%	128.1	122.6	4.4%
CPI-U (All Urban Consumers) Transportation	115.0	126.9	10.3%	119.5	113.7	5.1%
CPI-U (All Urban Consumers) Medical Care	153.9	168.4	9.4%	161.6	148.2	9.0%
CPI-U (All Urban Consumers) Energy	93.2	110.9	19.0%	100.7	93.9	7.1%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	114.8	122.9	7.1%	118.5	113.1	4.9%
GNP Price Deflator (1982=100) (qtly.)	128.0	133.1	4.0%	131.0	125.9	4.1%
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.5	124.7	0.2%	124.8	123.7	0.9%
Total Civilian Employment (mil.)	117.9	117.4	–0.4%	118.0	117.2	0.7%
Unemployment Rate	5.3	5.9	11.3%	5.5	5.3	3.8%
Construction						
Total Construction (mil. of dol.)	20,329.0	17,200.0	–15.4%	19,549.4	22,494.0	-13.1%
Residential	9,278.0	7,008.0	-24.5%	8,913.1	10,333.4	-13.7%
Nonresidential	7,508.0	6,100.0	-18.8%	6,806.0	8,078.7	-15.8%
Non-Building	3,543.0	4,091.0	15.5%	3,830.2	4,081.9	-6.2%
New Dwelling Units (no.)	99,203	73,433	-26.0%	96,211	116,806	-17.6%
Interest Rates						
Federal Funds Rate	8.55	7.81	-8.7%	8.19	9.24	-11.3%
Short Term (3-month Treasury bill rate)	7.65	7.07	-7.6%	7.58	8.15	-7.0%
Long Term (30-year Treasury bond yields)	8.03	8.60	7.1%	8.71	8.68	0.3%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	10.50	10.00	-4.8%	10.05	10.87	-7.6%
Mortgage Rates (new homes)	9.78	9.61	-1.7%	9.70	9.70	0.0%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F.W. Dodge Report, McGraw-Hill: National Construction Data.

Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics: Consumer Price Indexes, Producer Price Index.

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Utah Economic and Business Review

Volume 51
Number 3
March 1991

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MANUFACTURING IN THE WEST SINCE WORLD WAR II[1]

James A. Wood, Research Analyst

Prior to World War II, the West's manufacturing beginnings were found in the economic booms that settled and exploited the region: mining booms, cattle booms, farming booms and lumber booms. Although the West was isolated from major markets and nearly empty of people, its valuable natural resources brought manufacturing activity to the region as transportation costs forced manufacturers to locate near their resource. Thus, the early character of manufacturing in the western states came to be determined by the distribution of natural resources and transportation costs; but by 1990, the character of manufacturing had changed. Although mining and agriculture continued to exert an influence, World War II had become the most powerful defining force of manufacturing in the West.

Following World War II the United States entered a period of economic prosperity. Each western state shared in the national economic growth, but unevenly. In no other sector was the imbalance in economic development more conspicuous than in manufacturing. The objective of this paper is to present a comparative treatment of the postwar performance of manufacturing in the western states to better understand the process of western economic development.

The Changing Presence of Manufacturing in the West

Following World War II, the West's manufacturing sector lagged far behind the national average. In 1946, manufacturing earnings in the West represented only 8.3 percent of total earnings compared to 26.6 percent nationally. Colorado was the only western state where manufacturing earnings as a percent of total earnings exceeded 10 percent. By western states' standards, Utah's manufacturing sector had a respectable 9.3 percent of total earnings (Table 1).

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[1] The geographic boundaries used herein are designated by the U.S. Bureau of the Census for the Mountain States: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming. The structure, character and economic growth of this so-called region, however, demonstrate significant differences, particularly regarding Montana and Wyoming. The economies of Montana and Wyoming, in many respects, are more similar to North Dakota, South Dakota and Nebraska than the western states; therefore, they are at times given a minor status in the state-by-state comparisons.

Table 1

Manufacturing Earnings as Percent of Total Earnings

State	1946	1950	1960	1970	1980	1989
Arizona	5.97%	7.00%	13.57%	16.15%	17.15%	15.52%
Colorado	11.34	13.71	16.26	15.63	15.61	15.04
Idaho	8.70	11.25	15.94	15.78	17.30	17.54
Montana	7.32	8.27	10.99	10.46	9.94	8.39
Nevada	4.61	5.54	5.03	4.01	4.98	4.42
New Mexico	5.92	5.91	6.43	5.86	6.74	7.84
Utah	9.27	13.26	18.66	15.59	17.12	16.88
Wyoming	5.65	6.13	7.84	6.11	4.56	4.97
U.S.	26.64	28.76	29.44	26.64	24.61	19.68

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

World War II served as the catalyst for the expansion of manufacturing in the West. Wartime expenditures by the federal government produced an enormous capital investment in science, technology, and manufacturing facilities; investments which would quicken the postwar economic diversification of the region. Perhaps the most dramatic and symbolic war-related expansion was the extension of the steel industry to the West with the federal government's decision to built the Geneva Steel Works near Provo, Utah. The steel industry epitomized the dominance of eastern manufacturing and any expansion to the West was vigorously opposed by eastern industrialists. Despite the opposition of these industrialists, the war was transforming the nation's economy and closing the manufacturing gap between the East and the West.

No other event in this century approaches the impact that World War II had on Utah's manufacturing sector. The federal government's $200 million investment in the Geneva Steel Works would significantly alter the composition of Utah's manufacturing sector. Without federal funds, Utah's steel industry probably would have remained a modest component of the state's manufacturing sector. Private capital markets simply would not have risked a $200 million investment in a steel plant in Provo, Utah. The sparsely populated western states were too isolated and distant from major west coast markets to justify huge capital investments in large-scale manufacturing operations. At the time an investment of more than $20 million in any one year in new plant and equipment in Utah was considered extraordinary. In 1947, new plant and equipment expenditures in the state were only $17 million, and not until 1974 did investment in new plant and equipment exceed $100 million.[2]

The federal government had stepped up as wartime financier to reshape Utah's manufacturing sector. Prior to World War II, manufacturing in Utah had been largely characterized by the processing of farm products and nonferrous metals. In 1940, 44 percent of all manufacturing employees in Utah were involved in activities such as refining sugar from sugar beets, canning fruits and vegetables, milling grain and producing dairy products, i.e., the Food and Kindred Products sector. But with the opening of the Geneva Steel Works, Utah's manufacturing sector began the shift from principally residentiary activity to export-based activity. "Blast Furnace and Steel Mill" employment would now join the "Smelting and Refining of Nonferrous Metals" by Kennecott Copper employees as important export-based manufacturing activities.

During the immediate postwar period and the decade of the 1950's, manufacturing activity made huge gains in the West. Leading the rise was Arizona, where manufacturing earnings increased an astonishing 850 percent between 1946 and 1960. Utah ranked second among the eight western states with a gain of 510 percent for the period. A more detailed look at Utah shows that the manufacturing sector was the stellar performer among all employment sectors in the immediate postwar period.

Increase in Earnings in Utah 1946-1960	
Manufacturing	510%
Mining	306%
Construction	350%
Transportation and Public Utilities	203%
Trade	218%
Finance, Insurance, Real Estate	418%
Services	380%
Government	228%

Source: Bureau of Economic Analysis, State Personal Income, 1929-1987, July 1989.

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[2] U.S. Department of Commerce, Bureau of the Census, Census of Manufactures, Utah.

Although gains in manufacturing earnings came to all western states, the relative importance of manufacturing in Montana, Nevada, New Mexico and Wyoming remained, for all practical purposes, unchanged. Nevada is a particularly interesting case. The average annual real growth rate in Nevada's manufacturing earnings is higher than every other western state except Arizona (Table 2). Despite this rapid growth, the relative position of manufacturing remains unchanged because other non-manfacturing sectors in Nevada have grown so rapidly (data appear in Table 1).

Table 2

Manufacturing Earnings by State

(Constant Dollars - 1989)

State	Manuf. Earnings 1946 (millions)	Manuf. Earnings 1989 (millions)	Average Annual Growth Rate
Arizona	$213.5	$6,087	8.1
Colorado	829.6	6,526	4.9
Utah	335.5	2,854	5.1
Idaho	286.7	1,782	4.3
New Mexico	158.6	1,108	4.6
Nevada	61.0	700	5.8
Montana	256.2	619	2.1
Wyoming	103.7	242	2.0
U.S.	$240,645	$625,476	2.2

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

In those states where the growth in manufacturing earnings have exceeded that of the non-manufacturing sectors, the relative importance of manufacturing has increased. The most meaningful achievements have been in the three states--Arizona, Idaho and Utah--where the percent share of manufacturing earnings in each state nearly doubled during the 1946-to-1960 period. For these three states the real growth rates in manufacturing earnings since World War II have been 8.1 percent, 4.3 percent and 5.1 percent respectively.

Colorado with $6.5 billion in manufacturing earnings in 1989 has never relinquished its number one ranking as the top manufacturing state in the West notwithstanding the rapid growth of Arizona. The expansion of Arizona's manufacturing sector has led to large gains in the state's share of manufacturing in the West. Immediately following the war, Arizona's manufacturing sector accounted for only 9.5 percent of total manufacturing earnings in the western states, and was ranked behind Colorado, Utah, Idaho and Montana. Today, with nearly 31 percent of the total manufacturing earnings in the region, Arizona's position is second only to Colorado. These two states dominate total manufacturing earnings in the region. Over the postwar period, Utah has managed to hold on to its relative share of manufacturing in the region; whereas Montana's position has seriously eroded, declining from 11.4 percent to 3.1 percent (Table 3).

Table 3

Percent Distribution of Manufacturing Earnings Within the Region

State	Percent Distribution of Manufacturing Earnings 1946	1989
Arizona	9.5	30.6
Colorado	37.0	32.8
Idaho	12.8	9.0
Montana	11.4	3.1
New Mexico	7.1	5.6
Nevada	2.7	3.5
Utah	15.0	14.3
Wyoming	4.6	1.2

Source: Bureau of Economic Analysis, State Personal Income: 1929-87 and Survey of Current Business, August 1990.

From a review of the data it seems reasonable to conclude that among the eight states of the region, four of them--Arizona, Colorado, Utah and Idaho--each have a notable presence of manufacturing activity; whereas in the remaining four states of Montana, Nevada, New Mexico and Wyoming, manufacturing plays a secondary or minor economic role. The former set of states now approaches the national average in terms of the relative share of manufacturing earnings. In 1989, in the U.S. economy manufacturing earnings represented 19.7 percent of total earnings; only slightly greater than the western states of Arizona, Colorado, Idaho and Utah, where manufacturing accounted for 15 to 17 percent of total earnings (shown in Table 1).

Manufacturing in the West, although still only a fraction of total manufacturing activity in the United States, has an improved presence. In 1989, manufacturing earnings in the eight western states accounted for 3.2 percent of the U.S. total, a significant increase over the 0.9 percent share for the region in 1946.

Manufacturing Employment and Wages in the West

In a broad sense, the western states move together as a group, with advances and declines in manufacturing employment. Wyoming and Montana, however, remain on the periphery, too remote geographically and too small economically to fully participate. But for the remaining six states they do seem to act in concert, i.e., move the same direction with increases and decreases in manufacturing employment. In 24 of the 44 years since World War II, manufacturing employment in all six states has moved in the same direction. The longest period of complete unanimity was from 1971 to 1979. The widespread prosperity was interrupted by the single worst year for postwar manufacturing in the West--1975. The recession of that year rippled through every western state, reducing manufacturing employment in the region by 29,200 jobs, a 6.5 percent reduction in manufacturing employment.

Manufacturing employment trends for each decade show that the region performed better during the 1950's and the 1970's than in the 1960's and 1980's. Of some note is the extent of the slowdown in manufacturing job growth in the 1980's. It is estimated there will be 100,000 fewer new manufacturing jobs in the West in the 1980's than there were in the 1970's. A sense of the ebb and flow of manufacturing employment within the region is illustrated by the data in Table 4.

The 1980's have been a period of diverse performance among western states. Arizona and Colorado have suffered considerable weakness in their manufacturing sectors over the past five years. The extent of this weakness is confirmed by the fact that Utah, despite major layoffs in Primary Metals at Geneva Steel and Kennecott Copper, led the western states in manufacturing job growth for the 1985-1990 period, as follows:

State Increases in Manufacturing Jobs, 1985-1990

Utah	12,300	Nevada	4,300
Idaho	9,700	Colorado	3,700
Arizona	7,600	Montana	1,500
New Mexico	5,600	Wyoming	1,000

Source: U.S. Department of Labor, Employment and Earnings.

Table 4
Change in Manufacturing Employment by Decade
(in thousands)

State	1950-1960	1960-1970	1970-1980	1980-1990
Arizona	32.3	41.9	63.2	34.8
Colorado	27.0	30.2	59.6	15.5
Idaho	6.4	11.5	13.2	10.9
Montana	2.4	3.6	.3	-1.0
Nevada	1.9	3.2	10.6	7.0
New Mexico	6.8	4.3	13	8.5
Utah	17.8	8.5	31.7	18.6
Wyoming	2.0	-1.0	2.2	-.6
Employment Growth	96.6	102.2	193.8	93.7
Percent Change	57%	38.2%	52.4%	16.6%

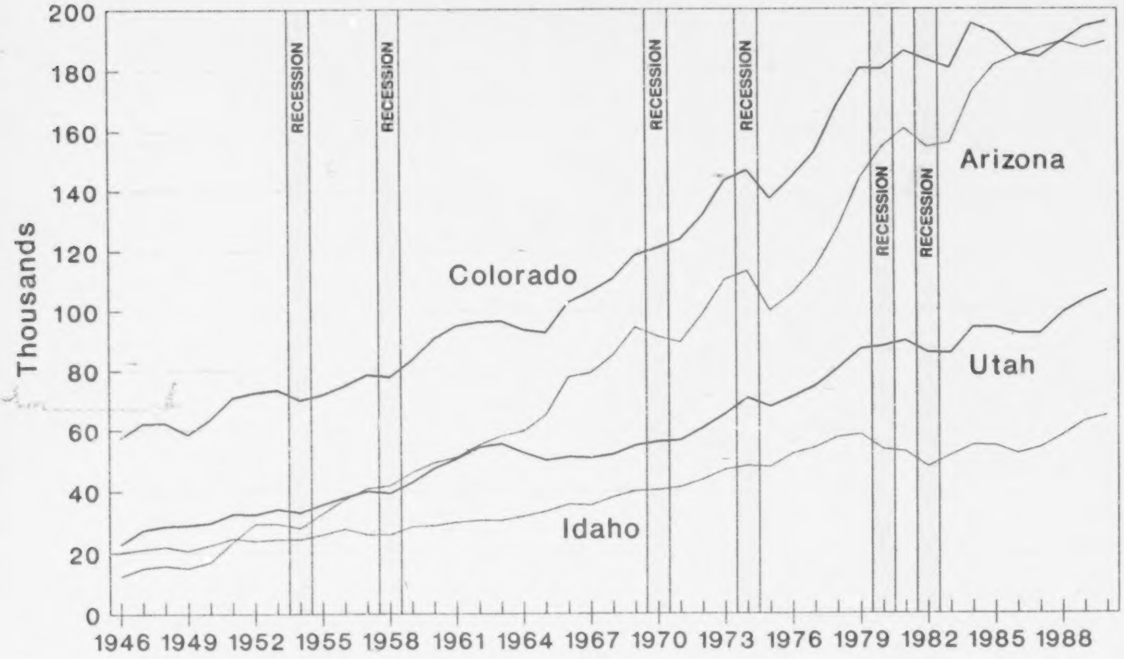
Source: U.S. Department of Labor, Bureau of Labor Statistics.

The performance of manufacturing employment in times of recession and expansion is shown in Charts 1 and 2. Among the four states included in Chart 1, the performance of Arizona's manufacturing sector has been the most spectacular. Beginning in 1946 with only 12,000 manufacturing jobs, about half of the number of manufacturing jobs in Utah in 1946, Arizona's upward trend line has been interrupted only by recessions; whereas in Colorado and Utah, manufacturing employment has declined substantially on two non-recessionary occasions, the 1963-65 period and the mid-1980's.

The trend line for manufacturing employment in Utah depicts a loss of jobs in four of the six postwar recessions; the worst recession was in 1982 when manufacturing employment declined by 4.0 percent -- 3,600 jobs. During the 1970 and 1979 recessions, manufacturing employment did not decline in Utah, but employment growth slowed to about 1 percent.

Chart 1

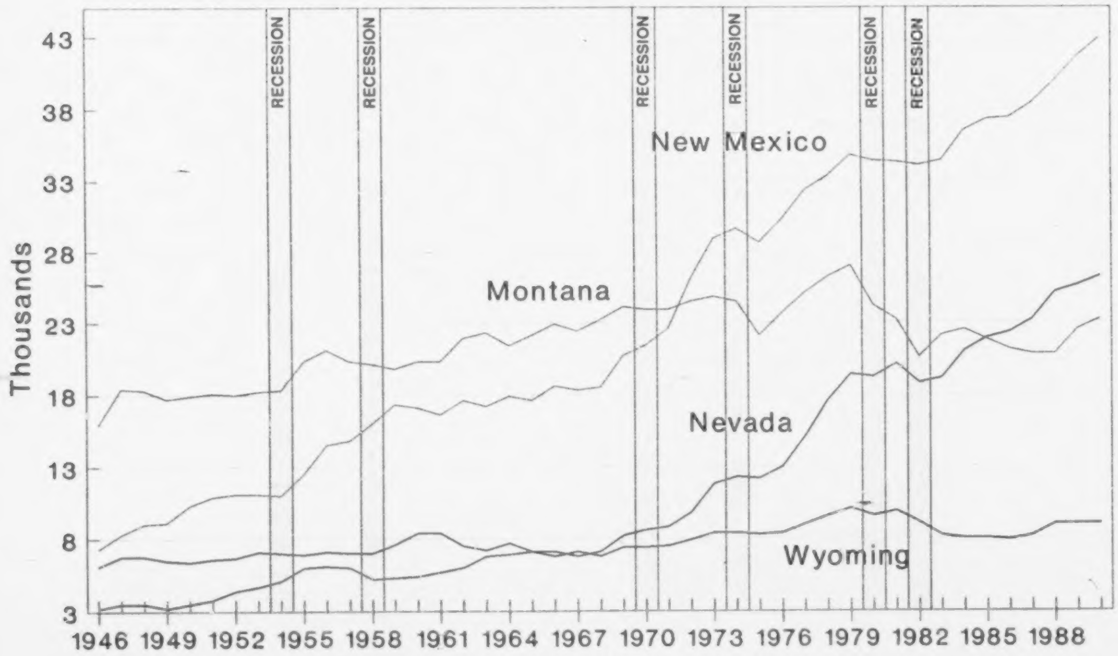
Manufacturing Employment in Four Western States 1946 to 1990



Source: Bureau of Labor Statistics

Chart 2

Manufacturing Employment in Four Western States 1946 to 1990



Source: Bureau of Labor Statistics

The 1963-1965 downturn in manufacturing employment in Utah originated with reductions in aerospace spending by the U.S. Department of Defense. These cutbacks precipitated the largest postwar employment decline in Utah's manufacturing sector. In two years, manufacturing employment dropped by over 10 percent, as Utah's aerospace industry lost 6,000 jobs. At Thiokol Corporation in Box Elder County, employment declined from 6,000 to 3,000 employees, following the decision to discontinue development of the Mobile Mid-Range Ballistic Missile.[3] Aerospace employment was also declining at Hercules Powder Company's Bacchus Works in Salt Lake County. At the end of 1962, Hercules had employed 6,000 workers, reflecting a rapid employment build-up for research and development of the Minuteman and Polaris missile systems.[4] By 1964, these missile systems had become operational, and employment layoffs followed, which reduced the work force at Hercules from 6,000 to 4,000.[5]

The 1986 decline in manufacturing employment in Utah reflects a loss of employment in the Primary Metals subsector due to the closure of Geneva Works of USX Corporation in Provo, Utah, and layoffs at milling and smelting operations of the Utah Copper Division of Kennecott Copper.[6] The employment volatility of Primary Metals has increased the vulnerability of Utah's manufacturing sector to recessions, but each western state has its own special vulnerability. Idaho lost nearly 20 percent of its manufacturing jobs between 1979 and 1983 in a four-year collapse of the lumber and wood product markets. Arizona's manufacturing sector was badly hurt in 1974 when a downturn in semiconductors led to layoffs of 8,000 employees.

Manufacturing Wages

The dominance of Arizona and Colorado in western manufacturing is illustrated in Chart 3. Together these two states account for nearly 60 percent of the manufacturing employment in the West, and they also enjoy the highest manufacturing wage rates. Colorado had the highest annual average manufacturing wage rate in 1989--$29,443, and New Mexico had the lowest annual manufacturing wage rate--$22,001, Table 5. Utah ranks third. The two highest wage manufacturing subsectors in Utah are Primary Metals and Transportation Equipment.

Athough the ranking by wage rate for these five states has not changed over the past 20 years, the wage gains in Colorado and Arizona have outdistanced those in the three remaining states. In 1969, Utah's annual average manufacturing wage rate was 89 percent of Colorado's; but by 1989 it had dropped to 82 percent. Over the same period, Idaho's manufacturing wage rate has slipped from 84 percent to 80 percent of Colorado; New Mexico dropped from 79 percent to 74 percent.

Also disturbing has been the decline in real wages. In real terms, manufacturing wages in Utah have declined 3.9 percent in the past 20 years. Utah is not unique in this respect--other western states have had a similar experience. In part, the decline in real wages can be explained by the changing composition of the manufacturing sector, especially in Utah. The loss of jobs in Utah's high wage Primary Metals industry has certainly contributed to a deteriorating real wage rate.

The Structure of Manufacturing in the West

The essential characteristic of postwar manufacturing in the West has been its diminishing dependence on natural resources based products, e.g., lumber, processed minerals and agricultural goods. Postwar growth has been centered in the production of intermediate and finished manufactured products such as semiconductors, computers, and aircraft parts.

The exceptions are the small manufacturing sectors of Wyoming and Montana that are still dominated by industries that process natural resources. Also, Nevada is a special case. Here manufacturing affects a residentiary nature (produced for local consumption) but without the traditional ties to agriculture. Tourism determines the direction of manufacturing development in Nevada, as evidenced by the leading manufacturing activities: printing and publishing, the stone, clay and glass products and the miscellaneous manufacturing industries. For the other states, some important remnants of the prewar pattern remain: meat packing in Colorado, lumber and processed vegetables (potatoes) in Idaho; and primary metals, fluid milk and cheese products in Utah.

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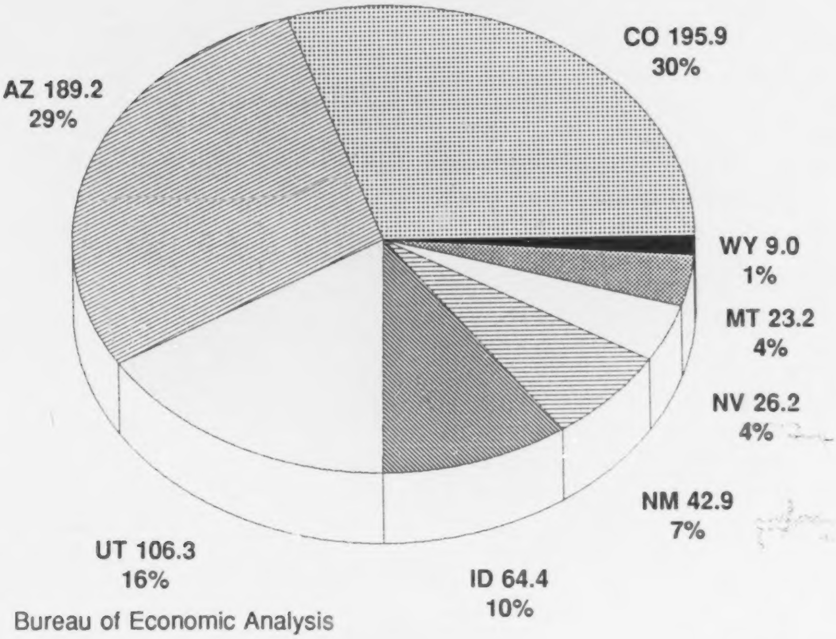
[3] "No Further Layoffs Due at Thiokol" Ogden Standard Examiner, September 20, 1964.

[4] "Hercules' Future Appears Bright" Deseret News, January 15, 1963.

[5] "No Drastic Job Cuts Seen for Bacchus", Deseret News, September 26, 1964.

[6] Primary Metals includes basic steel products, milling and smelting nonferrous metals (e.g., copper) and foundry work.

Chart 3
Percent Distribution of Manufacturing Employment, Mountain States
(Thousands of Employees)
1990



Bureau of Economic Analysis

Table 5
Average Annual Wage Rates by Manufacturing Sector
(1989)

Sector/State	Arizona	Colorado	Idaho	New Mexico	Utah
Manufacturing	$28,266	$29,433	$23,653	$22,001	$24,072
Food & Kindred Products	20,675	25,876	20,031	16,672	18,169
Chemicals	24,435	36,572	35,602	21,353	26,717
Lumber	17,991	d	24,858	17,445	17,741
Primary Metals	27,588	26,908	23,601	28,815	33,403
Fabricated Metals	21,062	24,653	19,705	17,801	22,648
Machinery, except elec.	37,499	35,236	29,001	25,927	26,518
Electronic components	31,191	31,669	28,663	26,419	28,269
Transportation Equipment	36,756	d	15,057	32,845	33,276
Instruments	32,861	30,605	17,528	27,465	22,648

d Not shown to avoid disclosure.

Source: U.S. Department of Labor, Employment and Wages Annual Averages 1989, October, 1990.

Otherwise the manfacturing matrix of the West reflects the emergence of high wage, high technology-based industries: computer, electronics and aerospace; industries that in large part, were created by federal research and development expenditures during World War II, and have remained centered in the western United States. A great advantage for remaining in the West was the research infrastructure developed with such universities as Stanford, Berkeley, and the California Institute of Technology. Also many of the new companies, with their affluent, white-collar employees, preferred the non-union environment of western locations.

These new technology-based industries enjoyed much greater locational freedom because transportation costs were less significant in the production of their lightweight, high value products; hence they became known as "footloose" industries. These footloose industries "develop purely by chance in some locations."[7] In 1950 when Motorola chose Phoenix as the location for a semiconductor plant, that city had no commanding comparative advantage over Denver, Salt Lake or Albuquerque. The same is true of Hewlett Packard's decision in 1963 to locate in Colorado or Sperry Rand's (now Unisys) decision in 1956 to locate in Utah. But the choice of the state and the region by these types of companies has come to dominate the structure of manufacturing in most western states, as well as influence the development of the residentiary industries such as "specialized banking, brokerage, wholesaling and other business services..."[8]

Computer, Electronics and Aerospace Industries in the West

Although the five western states of Arizona, Colorado, Idaho, New Mexico and Utah have only 3.0 percent of the total U.S. manufacturing employment, they have a much greater share of manufacturing employment in the computer, electronics and aerospace industries. The percent share of employees in 1989 in each industry for the five western states is given below:

Computer and Office Equipment (SIC 357) 8.2%
Electronic Components (SIC 367) 9.7%
Aircraft and Aircraft Parts (SIC 372) 3.5%[a]
Guided Missiles (SIC 376) 16.9%

[a] Arizona has 75 percent of the aircraft employment in the five-state area.

There are 114 manufacturing industries at the three-digit SIC level and the four industries listed above comprise some of the largest and fastest growing. The computer industry (SIC 357) and the electronics industry (SIC 367) rank third and fourth in total employment growth since 1969. The guided missile

Table 6
Manufacturing Employment in Selected Sectors
(1989)

Sector	Arizona	Colorado	Idaho	New Mexico	Utah	United States
Computers	8,368	21,182	4,124	835	2,756	454,963
Electronics	34,445	7,922	4,619	3,942	8,686	614,036
Aircraft Parts	18,951	2,127	89	1,929	1,872	708,686
Guided Missiles	6,500	13,247	0	1,056	12,133	195,009
Total	68,264	44,478	8,832	7,762	25,447	1,972,694
Percent of State's Total Manufacturing	36.3%	23.1%	14.5%	18.5%	24.9%	10.2%

Source: Department of Employment Security Offices for each state.

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[7] North, Douglass C., "Location Theory and Regional Economic Growth," Regional Economics, edited by David L. McKee, Robert D. Dean and William Leahy, Free Press, 1970, pg. 42.

[8] North, pages 39-40.

industry ranks 11th with an increase of more than 66,000 employees in the last 20 years.

Unlike the early manufacturing history of the United States, when the West was largely excluded from events, the postwar period has been a time of manufacturing expansion for the West, and the region has come to specialize in some of the fastest growing manufacturing sectors. Employment data by state for the computer, electronics and aerospace industries are given in Table 6.

The Decline of Food and Kindred Products and Primary Metals

The postwar paradigm for most western states has been the structural shift to manufacturing activities producing technology-based export commodities. The gains in Electronics, Computers and Aerospace have come at the expense, so to speak, of the Food and Kindred Products and Primary Metals subsectors.

Food and Kindred Products ranked either first or second in terms of manufacturing earnings in every western state in 1960. But by 1989 the relative importance of this subsector had declined in each state; most precipitously in Arizona where the Food and Kindred Products share declined from 13 percent of earnings in 1960 to only 3.9 percent in 1989. In Utah, Food and Kindred Products declined from 16.7 percent of manufactured earnings in 1960 to 8.4 percent in 1989. The shrinking share of earnings for Food and Kindred Products in Utah was halted in the mid-80's when All American Gourmet and Stouffer Foods Corporation established frozen food operations in the state.

The Primary Metals subsector (blast furnaces, steel products, foundries, and nonferrous rolling and drawing) in Arizona, Colorado and Utah has also undergone significant declines in its relative position. Since 1960, the share of manufacturing earnings generated by the Primary Metals subsector in Arizona has dropped from 8.3 percent to 4.3 percent. The most dramatic declines, however, have occurred in Colorado and Utah. In 1960, Primary Metals accounted for 11.4 percent of manufacturing earnings in Colorado and a hefty 24.2 percent in Utah, where it was the largest manufacturing subsector. By 1989, Primary Metals earnings had dropped to only 1.6 percent in Colorado and 7.7 percent in Utah. Currently, the Colorado Fuel and Iron Company of Pueblo is fighting for survival; but in its heyday of producing steel rails, the company had employed as many as 15,000 workers and had been part of the Rockefeller empire. In Utah, Geneva Steel was sold in 1987 by USX Corporation for $44.1 million to Basic Manufacturing and Technologies of Utah. Geneva Steel had been closed for over a year, due initially to a labor dispute; however, once the dispute was settled, USX decided against reopening the facility. Today Geneva Steel employs about 2,700 workers, approximately one-third the number employed in 1960.

The shift in the structure of Utah's manufacturing sector from primary metals and food processing to aerospace and electronics is shown in Table 7. In Table 8, the major manufacturing subsectors are ranked for each state. There data show the concentration of manufacturing activity for several states in electronics, machinery (computers) and transportation (aerospace).

Table 7

The Structure of Manufacturing in Utah

	Percent of Manufacturing Earnings			
Sector	1989	1980	1970	1960
Durable Goods	74.3	75.0	69.0	68.0
Trans. Equipment	21.3	12.4	12.4	14.6
Electronic Components	13.2	7.6	5.1	1.8
Machinery	7.8[a]	14.5	11.1	4.6
Primary Metals	7.7	15.7	20.8	24.2
Fabricated Metals	6.3	7.9	5.8	5.3
Stone, Clay and Glass	3.4	5.0	4.9	5.4
Nondurable Goods	25.7	25.0	31.0	32.0
Food and Kindred Products	8.4	8.1	13.5	16.7
Printing and Publishing	6.3	5.3	5.8	4.6
Apparel	2.3	3.3	4.4	2.1
Chemicals	3.7	3.9	2.9	2.5
Other Manufacturing	19.6	16.3	13.3	18.2
Total Manufacturing Earnings	100	100	100	100

[a] This sector was adversely effected by the recent reclassification of Unisys which resulted in a shift of 3,000 workers from the Machinery to Electronic Components Industry.

Source: Bureau of Economic Analysis, State Personal Income: 1929-87 and Survey of Current Business August 1990.

Table 8
Percent Distribution of Manufacturing Earnings
(1989)

State/Sectors	Percent	State/Sectors	Percent
Arizona	24.4	Nevada	
Electronic Components	18.7	Printing and Publishing	15.4
Transportation Equipment	14.0	Miscellaneous Manufacturing Products	10.6
Industrial Machinery	7.8	Stone, Clay and Glass Products	10.1
Instruments	7.0	Industrial Machinery	8.7
Printing and Publishing	28.1	Instruments	8.3
Other Manufacturing		Other Manufacturing	46.9
Colorado		New Mexico	
Industrial Machinery	20.4	Electronic Components	16.2
Electronic Components	12.0	Instruments	11.7
Transportation Equipment	11.9	Transportation Equipment	10.6
Food and Kindred Products	11.5	Industrial Machinery	8.1
Printing and Publishing	9.4	Printing and Publishing	7.2
Other Manufacturing	34.8	Other Manufacturing	46.2
Idaho		Utah	
Lumber	30.9	Transportation Equipment	21.3
Food and Kindred Products	22.0	Electronic Components	13.2
Industrial Machinery	11.5	Food and Kindred Products	8.4
Electronic Components	9.0	Industrial Machinery	7.8
Chemicals	8.0	Primary Metals	7.7
Other Manufacturing	18.6	Other Manufacturing	41.6
Montana		Wyoming	
Lumber	39.6	Petroleum and Coal Products	20.7
Food and Kindred Products	9.7	Printing and Publishing	13.6
Primary Metals	9.7	Chemicals	9.5
Printing and Publishing	7.9	Food and Kindred Products	9.5
Petroleum and Coal Products	6.5	Industrial Machinery	7.0
Other Manufacturing	26.6	Other Manufacturing	39.7

Source: Bureau of Economic Analysis, Survey of Current Business, August 1990, Table 3.

Major Manufacturers in the West

The location of large manufacturers in the West have helped shape the structure of the industry as well as determine the distinguishing characteristics of manufacturing in western states: Arizona--semiconductors and aircraft and aircraft engine production; Colorado--meat packing, computers and computer memory systems; Idaho--lumber, computers and semiconductors; New Mexico--aircraft avionics and semiconductors; Utah--space and missile propulsion units, primary metals, and semiconductors. Details on major companies, their products and date of location in the respective states appear in Table 9. This information was obtained from telephone interviews with public information officers from each company.

Summary

- Natural resources and transportation costs determined the early history of manufacturing in the western states. Prior to World War II, manufacturing in the West was characterized by the processing of products at smelters, slaughterhouses, mills, canneries and creameries.

- In 1946, manufacturing in the West accounted for only 8.3 pereent of the total earnings in the region, compared to 26.6 percent for the manufacturing sector nationally. By 1989 the share of manfac-turing earnings of total earnings for the eight western states had grown to 13.1 percent, compared to 19.7 percent nationally.

- Arizona's manufacturing sector has outperformed all other western states. Arizona's share of manufacturing earnings in the region has grown from 9.5 percent in 1946 to 30.6 percent in 1989.

- Within the region, manufacturing has a notable presence in four states: Arizona, Colorado, Idaho and Utah. Manufacturing represents 15 to 17 percent of earnings in each of these states. In the four remaining states -- Montana, Nevada, New Mexico and Wyoming -- manufacturing earnings range between 4 to 8 percent of total earnings.

- The 1950's and 1970's were periods of impressive manufacturing growth in the West with employment increasing 57 percent and 52 percent respectively. During the decade of the 1970's, manufacturing in the region grew by more than 193,000 jobs compared to only 94,000 jobs in the decade of the 1980's.

- The six postwar recessions have interrupted and slowed manufacturing growth in the West. For Utah, two non-recessionary periods have also impeded growth: 1963-1965 -- aerospace cutbacks by Department of Defense caused a loss of 10 percent of the state's manufacturing employment; 1985-1987 -- problems in the Primary Metals industry caused a loss of 2,500 jobs as Geneva Steel shut down, and modernization at Kennecott Copper reduced their workforce at smelters and mills. Despite these layoffs in the Primary Metals industry, Utah's manfacturing sector achieved greater employment increases than any other western state during the 1985-1990 period, in large part due to growth in aerospace employment.

- No other event in this century had the impact that World War II had on manufacturing in the West. The war spawned new industries compatible with locations in the western states, industries that were less dependent on proximity to markets and resources as well as less sensitive to transportation costs. Three such industries, computers, electronics and aerospace, have been the nucleus for the region's gains in postwar manufacturing. In 1989 the West, which has only 3 percent of total U.S. manufacturing employment, had 8.2 percent of the employment in the computer industry, 9.7 percent of the employment in the electronic components industry and 16.9 percent of the employment in the guided missile industry.

Table 9

Products, Beginning Date and Employees for 1991

	1991 Employment	Year Located
Arizona		
Semiconductors and Microprocessors		
Motorola	21,000	Since 1950
Intel	2,700	1980
Aircraft		
McDonnell Douglas (Commercial and DOD Helicopters)	4,800	1982
Honeywell Sperry (Guidance systems for helicopters and business jets)	6,000	1956
Aircraft Engines and Parts		
Garrett Division of Allied Signal Aerospace (Gas turbine engines, secondary turbine engines, pneumatic systems)	12,000	1951
Colorado		
Meat Packing		
Monfort Meat Packing	6,000	Prewar
Computers		
Hewlett Packard (Work stations and peripherals)	7,000	1963
Digital Equipment Corp (Disk drives and controllers)	3,400	Approx. 1965
Cray Computer (Supercomputer)	276	1988
Computer Memory Storage Systems		
Storage Technology	4,300	1969
Electronics Components		
Litton (Mobile tracking stations for aircraft)	650	1978
Texas Instruments (Defense electronics systems work)	700	1979
Unisys	650	1984
Idaho		
Logging, Sawmills, Planing Mills and Paper Products		
Boise Cascade	1,900	1957
Computer Peripherals		
Hewlett Packard (Disk Drives and printers)	4,000	1963
Frozen and Dehyrated Fruits and Vegetables		
J.R. Simplot	5,200	1940's
Ore-Ida Frozen Food (Frozen french fries)	1,000	1960
New Mexico		
Semiconductors		
Signetics	1,000	1982
Intel	1,500	1980
Search and Navigation Equipment		
Honeywell (Aircraft avionics)	1,500	1981
Utah		
Space Propulsion Units		
Thiokol	7,000	1958
Hercules[a]	3,000	1958
Semiconductors		
National Semiconductor	1,200	1977
Signetics	1,200	1967
Electronic Components		
Unisys[b]	3,000	1956
Primary Metals		
Geneva Steel	2,700	1947
Kennecott Minerals Company[c]	850	Prewar

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[a] Hercules Powder Company located in Utah in 1914. Hercules produced blasting powder for the copper and coal mines of Utah. In 1958 Hercules entered the aerospace business.

[b] Originally Sperry Rand Corporation.

[c] The employment figures reflect only those employees of Kennecott Minerals Company involved in milling and smelting of copper.

Definition of Manufacturing and Classification of Manufacturing Activity

Manufacturing is the "action or process of making articles or material by the application of physical labour or mechanical power"[9]. The Bureau of Labor Statistics has classified manufacturing activity according to industrial product. The first level of disaggregation is the two broad categories of Durable Goods and Nondurable Goods. The next level of disaggregation moves to the two-digit Standard Industrial Classifications (SIC) presented below. The two-digit classifications, however, only begin to detail the diversity of the manufacturing sector. Each two-digit classification is comprised of a multiplicity of industries further classified at the three- and four-digit level. Special mention must be made of four industries at the three-digit level that have played a crucial role in the development of manufacturing in the West: Computer and Office Equipment (SIC 357), Electronic Components and Accessories (SIC 367); Aircraft and Parts (SIC 372) and Guided Missiles, Space Vehicles and Parts (SIC 376). These industries have been identified in the list below:

Durable Goods

SIC 24 Lumber & Wood Products
25 Furniture & Fixtures
32 Stone, Clay & Glass Products
33 Primary Metal Industries
34 Fabricated Metals Products
35 Industrial Machinery & Equipment
357 Computer & Office Equipment
36 Electronic & Other Electronic Equipment
367 Electronic Components and Accessories
37 Transportation Equipment
372 Aircraft and Parts
376 Guided Missiles, Space Vehicles and Parts
38 Instruments & Related Products
39 Misc. Manufacturing Industries

Nondurable Goods

SIC 20 Food & Kindred Products
22 Textile Mill Products
23 Apparel & Other Textile Products
26 Paper & Allied Products
27 Printing & Publishing
28 Chemicals & Allied Products
29 Petroleum & Coal Products
30 Rubber & Misc. Plastics Products
31 Leather & Leather Products

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[9] The Oxford English Dictionary, Second Edition, Volume IX, Clarendon Press - Oxford, 1989.

Utah Business Statistics

UTAH DATA	Dec. 1989	Dec. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	23,017	24,931	8.3%	24,263	22,353	8.5%
New Corporations (no.)	522	468	-10.3%	499	465	7.4%
New Car, Truck, and Motor Home Sales (no.)	4,177	3,915	-6.3%	5,102	5,058	0.9%
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	74.90	79.20	5.7%	76.64	72.46	5.8%
Lambs (cwt)	55.00	44.20	-19.6%	48.65	60.88	-20.1%
Milk Wholesale (cwt)	15.00	10.90	-27.3%	12.91	12.59	2.5%
Alfalfa Hay, Baled (per ton)	85.00	84.00	-1.2%	84.92	84.75	0.2%
Cattle Slaughtered (live weight) (thous. of lbs.)	44,789	43,471	-2.9%	47,014	47,990	-2.0%
Construction						
Total Construction (thous. of dol.) 1	90,293.0	53,401.7	-40.9%	82,746.7	79,934.9	3.5%
Residential	23,182.0	22,451.4	-3.2%	44,047.3	36,180.8	21.7%
Nonresidential	49,549.0	24,453.1	-50.6%	25,947.1	27,336.0	-5.1%
Additions, Alterations, and Conversions	17,562.0	6,497.2	-63.0%	12,752.3	16,418.1	-22.3%
Total Permit Construction (thous. of dol.) 2	83,128.5	65,965.3	-20.6%	103,814.3	84,042.3	23.5%
Residential	24,707.2	23,516.7	-4.8%	48,282.9	37,318.4	29.4%
Nonresidential	48,235.1	24,178.8	-49.9%	35,245.5	32,466.9	8.6%
Additions, Alterations, and Repairs	10,186.2	18,269.8	79.4%	20,285.9	14,257.0	42.3%
New Dwelling Units (no.)	328	281	-14.3%	584	469	24.4%
Employment						
Civilian Labor Force (thous.)	809.8	777.0	-4.1%	797.4	789.0	1.1%
Total Employed Persons	778.7	742.9	-4.6%	761.5	752.0	1.3%
Unemployed Persons =	31.1	34.1	9.6%	36.0	37.0	-2.8%
Percent Total Labor Force	3.8	4.4	15.8%	4.5	4.7	-4.1%
Employees on Nonagricultural Payrolls (thous. of jobs)	717.3	747.5	4.2%	723.3	691.3	4.6%
Manufacturing	105.0	109.2	4.0%	106.1	103.1	2.9%
Mining	8.6	8.7	1.2%	8.6	8.1	6.1%
Contract Construction	26.0	28.1	8.1%	27.1	25.9	4.6%
Transportation, Communication, and Utilities	42.3	44.0	4.0%	42.8	40.9	4.7%
Wholesale Trade	39.3	39.6	0.8%	40.0	38.6	3.8%
Retail Trade	138.7	144.1	3.9%	135.7	127.9	6.2%
Finance, Insurance, and Real Estate	33.9	34.5	1.8%	34.1	33.4	2.2%
Services 3	174.7	187.1	7.1%	179.3	167.2	7.2%
Federal Government	39.4	37.9	-3.8%	39.6	40.0	-1.0%
State Government 4	40.6	42.1	3.7%	41.8	40.1	4.1%
Local Government 4	68.6	71.7	4.5%	68.0	66.2	2.8%
Average Weekly Hours						
Manufacturing	40.7	40.2	-1.2%	39.9	40.0	-0.3%
Mining	41.3	44.7	8.2%	43.8	41.0	6.9%
Wholesale Trade	36.1	37.1	2.8%	37.4	37.5	-0.2%
Retail Trade	28.1	26.5	-5.7%	26.6	27.4	-2.9%
Amount of Unemployment Compensation (thous. of dol.)	5,704.1	4,996.7	-12.4%	4,892.2	5,106.7	-4.2%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	2,117.8	1,155.5	-45.4%	1,623.7	2,192.8	-26.0%
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	94,950.6	NA	NA	NA	158,011.4	NA
Sales and Use Tax	3,236.2	NA	NA	NA	56,794.0	NA
Motor Fuel Tax	9,232.4	NA	NA	NA	11,515.9	NA
Individual Income Tax	63,444.8	NA	NA	NA	52,969.7	NA
Corporation Franchise Tax	493.4	NA	NA	NA	5,371.1	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,750.5	3,669.5	-2.2%	3,605.6	3,895.4	-7.4%
Crude Oil (thous. of bbls.)	2,408.7	2,235.7	-7.2%	2,291.7	2,354.0	-2.6%
Natural Gas (mil. of cu. ft.)	26,101.9	28,676.2	9.9%	26,636.2	23,044.7	15.6%
Coal (thous. short tons)	1,889.0	1,805.0	-4.4%	1,944.5	1,700.8	14.3%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	999,137	1,010,879	1.2%	998,529	990,694	0.8%
Highway Traffic Count Across State Lines	41,914	44,930	7.2%	44,035	38,856	13.3%
Transient Room Tax (thous. of dol.)	-253.5	NA	NA	NA	557.0	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	282.6	276.7	-2.1%	1,112.4	1,111.6	0.1%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	509,086	527,551	3.6%	517,155	500,607	3.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	187,570	200,469	6.9%	195,073	185,918	4.9%
Electric Customers (Residential)	488,185	NA	NA	NA	484,158	NA
Electric Customers (Commercial)	48,733	NA	NA	NA	48,158	NA
Natural Gas Customers (Residential & Commercial)	480,735	493,313	2.6%	486,655	473,242	2.8%
Natural Gas Customers (Industrial)	565	579	2.5%	573	565	1.5%

Utah Business Statistics

UTAH DATA	Dec. 1989	Dec. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	57.7r	60.6	5.0%	59.0	56.7	4.1%
Unemployment Rate	4.3r	4.4	2.3%	4.3	4.3	-1.5%
Auth. Permit Construction (thous. of dol.)	5,543.9	5,262.1	-5.1%	10,788.5	10,089.3	6.9%
New Dwelling Units (no.)	29	41	41.4%	79	67	18.2%
Postal Receipts (thous. of dol.)	681.3	933.4	37.0%	661.5	618.6	6.9%
Electric Customers (Residential)	49,581	50,398	1.6%	50,021	49,062	2.0%
Electric Customers (Commercial)	3,647	3,739	2.5%	3,696	3,620	2.1%
Natural Gas Customers (Residential)	52,323	53,625	2.5%	52,995	51,818	2.3%
Natural Gas Customers (Industrial)	55	56	1.8%	56	55	1.7%
Telephone Lines in Service (Mt. Bell)(Residential)	57,734	61,309	6.2%	60,378	56,973	6.0%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,254	13,055	6.5%	12,843	11,983	7.2%
Salt Lake County						
Non-Ag. Employment (thous.)	366.2r	381.6	4.2%	368.0	352.9	4.3%
Unemployment Rate	3.7r	3.7	0.0%	4.0	4.2	-5.3%
Auth. Permit Construction (thous. of dol.)	53,385.7	28,827.2	-46.0%	46,791.4	36,654.7	27.7%
New Dwelling Units (no.)	126	91	-27.8%	202	164	23.0%
Postal Receipts (thous. of dol.)	8,989.8	8,589.5	-4.5%	7,988.2	8,209.0	-2.7%
Electric Customers (Residential)	245,500	249,030	1.4%	246,723	243,239	1.4%
Electric Customers (Commercial)	21,061	21,259	0.9%	21,191	20,906	1.4%
Natural Gas Customers (Residential)	226,484	230,947	2.0%	228,746	224,784	1.8%
Natural Gas Customers (Industrial)	246	248	0.8%	246	243	1.2%
Telephone Lines in Service (Mt. Bell)(Residential)	239,112	248,277	3.8%	243,607	235,345	3.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	114,181	120,942	5.9%	118,200	112,946	4.7%
Utah County						
Non-Ag. Employment (thous.)	92.9r	97.9	5.4%	93.3	87.0	7.2%
Unemployment Rate	4.5r	3.6	-20.0%	3.8	4.2	-10.2%
Auth. Permit Construction (thous. of dol.)	9,165.9	16,890.4	84.3%	17,518.1	12,539.0	39.7%
New Dwelling Units (no.)	41	52	26.8%	108	74	45.8%
Postal Receipts (thous. of dol.)	1,826.2	1,688.2	-7.6%	1,686.6	1,438.1	17.3%
Electric Customers (Residential)	53,509	NA	NA	NA	53,208	NA
Electric Customers (Commercial)	6,398	NA	NA	NA	6,165	NA
Natural Gas Customers (Residential)	63,895	65,588	2.6%	64,590	63,131	2.3%
Natural Gas Customers (Industrial)	74	74	0.0%	74	74	0.0%
Telephone Lines in Service (Mt. Bell)(Residential)	67,398	68,604	1.8%	67,100	66,315	1.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	19,790	21,665	9.5%	20,947	20,768	0.9%
Weber County						
Non-Ag. Employment (thous.)	64.6r	66.5	2.9%	66.6	63.9	4.2%
Unemployment Rate	5.5r	6.0	9.1%	5.6	5.5	1.4%
Auth. Permit Construction (thous. of dol.)	5,551.2	2,126.6	-61.7%	6,447.5	6,261.5	3.0%
New Dwelling Units (no.)	53	17	-67.9%	40	46	-12.7%
Postal Receipts (thous. of dol.)	925.5	897.1	-3.1%	728.5	687.4	6.0%
Electric Customers (Residential)	54,636	55,209	1.0%	54,879	54,259	1.1%
Electric Customers (Commercial)	5,074	5,065	-0.2%	5,100	5,032	1.3%
Natural Gas Customers (Residential)	50,991	51,873	1.7%	51,389	50,613	1.5%
Natural Gas Customers (Industrial)	83	81	-2.4%	82	84	-2.2%
Telephone Lines in Service (Mt. Bell)(Residential)	47,910	47,601	-0.6%	47,050	47,409	-0.8%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,512	13,396	7.1%	13,217	12,263	7.8%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
r	Revised

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture*.
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report*.
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

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NATIONAL DATA	Dec. 1989	Dec. 1990	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,289.3	5,527.3	4.5%	5,465.2	5,200.8	5.1%
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,496.7	4,743.3	5.5%	4,645.5	4,384.3	6.0%
Industrial Production Indexes (seasonally adjusted) (1987=100)	108.6	107.2	−1.3%	109.2	108.1	1.0%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	519.6	532.8	2.5%	533.9	506.0	5.5%
Net Exports of Goods and Services (bil.) (qtly.)	−35.3	−28.8	−18.4%	−31.3	−46.1	−32.2%
Exports of Goods and Services (bil.) (qtly.)	642.8	697.4	8.5%	672.8	626.3	7.4%
Imports of Goods and Services (bil.) (qtly.)	678.1	726.2	7.1%	704.1	672.3	4.7%
Index of Leading Indicators (1982=100)	145.3	139.7	−3.9%	143.9	144.9	−0.7%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	126.1	133.8	6.1%	130.7	124.0	5.4%
CPI-U (All Urban Consumers) Food & Beverages	127.2	133.9	5.3%	132.1	124.9	5.8%
CPI-U (All Urban Consumers) Housing	124.9	130.5	4.5%	128.5	123.0	4.5%
CPI-U (All Urban Consumers) Transportation	115.2	127.2	10.4%	120.5	114.1	5.6%
CPI-U (All Urban Consumers) Medical Care	154.4	169.2	9.6%	162.8	149.3	9.1%
CPI-U (All Urban Consumers) Energy	93.2	110.1	18.1%	102.1	94.3	8.2%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	115.3	121.9	5.7%	119.1	113.5	4.9%
GNP Price Deflator (1982=100) (qtly.)	128.0	133.1	4.0%	131.5	126.3	4.1%
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.5	125.2	0.6%	124.8	123.8	0.8%
Total Civilian Employment (mil.)	118.0	117.6	−0.3%	117.9	117.3	0.5%
Unemployment Rate	5.3	6.1	15.1%	5.5	5.3	5.1%
Construction						
Total Construction (mil. of dol.)	18,814.0	13,405.0	−28.7%	19,280.7	22,462.0	−14.2%
Residential	7,442.0	5,308.0	−28.7%	8,750.3	10,203.0	−14.2%
Nonresidential	8,006.0	5,393.0	−32.6%	6,741.5	8,185.4	−17.6%
Non-Building	3,365.0	2,704.0	−19.6%	3,788.9	4,073.5	−7.0%
New Dwelling Units (no.)	84,551	56,574	−33.1%	94,150	115,044	−18.2%
Interest Rates						
Federal Funds Rate	8.45	7.31	−13.5%	8.10	9.22	−12.1%
Short Term (3-month Treasury bill rate)	7.64	6.81	−10.9%	7.51	8.12	−7.5%
Long Term (30-year Treasury bond yields)	8.02	8.31	3.6%	8.73	8.59	1.7%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	10.50	10.00	−4.8%	10.01	10.87	−7.9%
Mortgage Rates (new homes)	9.70	9.45	−2.6%	9.68	9.76	−0.8%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F.W. Dodge Report, McGraw-Hill: National Construction Data.

Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics: Consumer Price Indexes, Producer Price Index.

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Utah Economic and Business Review

Volume 51
Numbers 4 and 5
April / May 1991

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1990
A Year of Economic Growth for Utah

Austin Sargent, Research Analyst

Utah's economy continued to grow during 1990 as population, nonagricultural employment, payroll wages, gross taxable sales, property taxes charged and construction activity all increased compared to 1989. Nonagricultural employment grew 4.5 percent while wages increased 8.6 percent and monthly nonagricultural wages jumped 3.7 percent. Sales tax collections rose 6.3 percent and property taxes charged increased 3.1 percent. In 1990, the costruction industry, which began improving in 1989, posted a 24.4 percent increase in the number of new dwelling units authorized while the valuation of total permit authorized construction rose 23.5 percent. Total personal income and per capita income also increased in Utah. Total personal income increased 8.5 percent to $24.3 million and per capita personal income increased 7.6 percent to $14,083. In 1990, new car and truck registrations increased 0.9 percent while payments to counties in lieu of taxes decreased 1.5 percent.

The strongest economic growth occurred in the Mountainland, Southwest and Wasatch Front districts of the state. Moderate growth was experienced in the Bear River, Central, Southeast and Uintah Basin districts. The Uintah Basin and Southeast districts continue to suffer from sluggish activity in mineral and natural resource-based industries. Many counties, previously reliant on minerals and natural resources, are beginning to diversify their economies into services, trade and recreation-based industries. This diversification resulted in improved economic growth in many counties, and also served to minimize the impact of decreased activity in counties highly dependent on natural resources.

A summary of major economic indicators from 1987 to 1990 for Utah's counties appear in the detail tables. Seventeen indicators are grouped into six categories: Population, Labor Market and Income Data, Tax Data, Construction Activity, and two miscellaneous items - New Car and Truck Registrations by Owner's County and "Payments in Lieu of Taxes Act" made to states under provisions of federal public law.

Population

The 1990 population of Utah was estimated to be 1,729,050, a 1.4 percent increase over the 1989 figure of 1,704,800. Daggett county's population grew 7.7 percent while Washington and Summit counties each experienced a 4.0 percent increase in population growth. The population of Utah and Iron counties also grew by more than 2.0 percent from 1989 to 1990. The Mountainland region had a 3.1 percent increase in population followed by the Southwest region growing at 2.8 percent.

Population declined in nine counties from 1989 to 1990. Piute (-3.8 percent) and Wayne (-2.3 percent) counties experienced the largest decrease in population followed by Juab, Duchesne, Grand, Garfield, Carbon, Emery and Kane counties. The Southeast (-0.8 percent) and Uintah Basin (-0.4 percent) were the only regions to have experienced decreased population in 1990 compared to 1989.

Utah's population is highly concentrated along the Wasatch Front. In 1990, Salt Lake, Utah, Davis and Weber counties accounted for 77.6 percent of the total population. From 1989 to 1990, the population in these counties grew by 1.5 percent while the remaining counties in the state increased 1.1 percent. (More detailed information about the population of Utah and its counties can be found in the January/February 1991 issue of the *Utah Economic and Business Review.*)

Employment and Wages

Nonagricultural employment and wages improved substantially in 1990 as the Utah economy continued to grow. Overall, every multi-county district had increased employment and wages even though a few counties experienced a slight decrease in economic growth. Employment in Utah increased 4.5 percent from 692,244 to 723,660. For the second year in a row nonagricultural employment increased by more than 30,000 jobs. Washington county experienced a 12.8 percent increase in employment. Grand, Morgan, Juab, and Utah counties also had dramatic employment growth due in part to a resurgence of construction activity and the increased development of services, trade, manufacturing and recreation jobs. Decreased activity occurred in counties where defense and natural resource-based industries have been the primary suppliers of jobs. Box Elder (-4.9 percent) and Wayne (-4.1) had the largest declines in employment (Figure 1).

Nonagricultural payroll wages increased 8.6 percent in Utah while average monthly wages increased 3.7 percent from $1,585 to $1,644. Average monthly wages were highest in Box Elder ($2,209) and Emery ($2,202) counties and lowest in Kane ($1,016) and Rich ($977) counties. Average monthly wages increased more than 6 percent in Daggett, Iron, Utah, Wayne and Weber counties. Only Beaver (-2.3) and Emery (-0.1) counties had decreased average monthly wages.

Income

In 1990, total personal income in Utah rose 8.5 percent to $24.3 billion. Salt Lake county accounts for 46.4 percent of total personal income, while 79.9 percent of total personal income is accounted for by the four counties of Salt Lake, Utah, Davis, and Weber. Per capita income increased 7.6 percent to $14,083 in 1990 compared to $13,094 in 1989. The Wasatch Front district has the highest per capita income while the Central district has the lowest. Summit county has the highest per capita income in the state at $19,250. San Juan ($7,810) and Wayne ($9,700) counties have the lowest per capita incomes. Per capita personal income by county is shown in Figure 2.

Taxes

The valuation of assessed property rose 2.0 percent to $48.2 million and property taxes charged increased 3.4 percent from $735,970 in 1989 to $761,108 in 1990. The largest increases in property taxes charged were in Piute (37.1 percent), Sanpete (17.7 percent), and Box Elder (10.8 percent) counties, while the sharpest declines occurred in

Summit (-8.3 percent) and Duchesne (-7.7 percent) counties. State-wide gross taxable sales rose 6.2 percent to $14.8 million, from $13.9 million in 1989. Salt Lake county's $7.3 million in gross taxable sales, an increase of 6.4 percent over 1989 figures, accounted for 49.3 percent of the state total. Other counties that experienced significant increases in gross taxable sales were Tooele (28.5 percent), Uintah (13.5 percent), and Washington (11.5 percent). Gross taxable retail sales declined more than 10 percent in Rich, Piute, Wayne and Morgan counties while Juab, Kane and Carbon experienced smaller decreases. The percent change in gross taxable sales by county appear in Figure 3.

Construction

In the latter part of 1989 construction activity began to improve and throughout 1990 construction activity remained robust. The 7,009 new dwelling units authorized in 1990 was an increase of 24.4 percent compared to the 5,632 authorized in 1989. The value of residential construction rose 29.4 percent to $579.4 million, while the value of nonresidential construction ended 1990 up 8.6 percent to $422.9 million. Total construction valuation improved 23.5 percent to $1.2 billion in 1990 compared to $1.0 billion in 1989. The number of new dwelling units increased most dramatically in the Southeast (54.5 percent), Southwest (51.7 percent) and Mountainland (38.7 percent) districts. Only the Uintah Basin had fewer new dwelling units authorized.

The value of total construction increased by more than 100 percent in Uintah (357.2 percent), Grand (216.5 percent), Beaver (131.5 percent) and Carbon (104.5 percent) counties. Decreased total construction valuation of more than 50 percent occurred in Piute (-100.0 percent), Emery (-79.0 percent) and Duchesne (-56.9 percent) counties. (The *Utah Construction Report* published quarterly by the Bureau of Economic and Business Research contains more detailed statistics about construction activity in Utah's counties and communities).

Miscellaneous

New car and truck registrations by owner's county increased 0.9 percent from 1989 to 1990. Registrations increased in the Uintah Basin (8.4 percent), Southwest (3.2 percent) and Wasatch Front (1.8 percent) districts. New car and truck registrations fell in the Bear River, Central, Mountainland and Southeast districts. In 1990, payments in lieu of taxes decreased 1.5 percent to $9.1 million. The "Payments in Lieu of Taxes Act" provides payments to local units of government to compensate for the loss of tax revenue associated with federally-owned land. The Mountainland and Central districts had the largest decreases in payments in lieu of taxes while the Uintah Basin had the largest increase.

Summary

The economic growth experienced in Utah during 1990 as shown in the preceding article indicates that the effects of the national recession were mild in Utah. This positive economic growth, coupled with the slight impact of the national recession, bodes well for future economic expansion for Utah for the balance of 1991. All sectors of the economy should expand during 1992. Utah and the Western States will benefit from increased economic activity in the region as well as an improving national economy.

County Business Statistics Tables

Footnotes

Note: Totals may not add due to rounding.

[a] 1990 total personal income and per capita personal income for each county are projections by the Utah Department of Employment Security based on data from the Bureau of Economic Analysis (July 1991). Totals for the State of Utah are from the U.S. Department of Commerce, Bureau of Economic Analysis.

[b] Based on calendar year.

[c] Based on fiscal year.

[d] Comparable data are not available due to underreporting of construction activity in 1987.

na Not available.

[p] Preliminary.

[r] Revised.

Sources

Population:

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Labor Markets:

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Income Data:

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Tax Data:

Utah State Tax Commission, *Annual Report of the Utah State Tax Commission, 1986-87, 87-88, 88-89, 89-90* (Salt Lake City, years as indicated); and *Calendar Year and Fourth Quarter of 1990 Gross Taxable Retail Sales and Purchases in the State of Utah* (Salt Lake City, May 1991), pp. 34-63. Note: Use Tax Collections account for the differences between county figures and state totals.

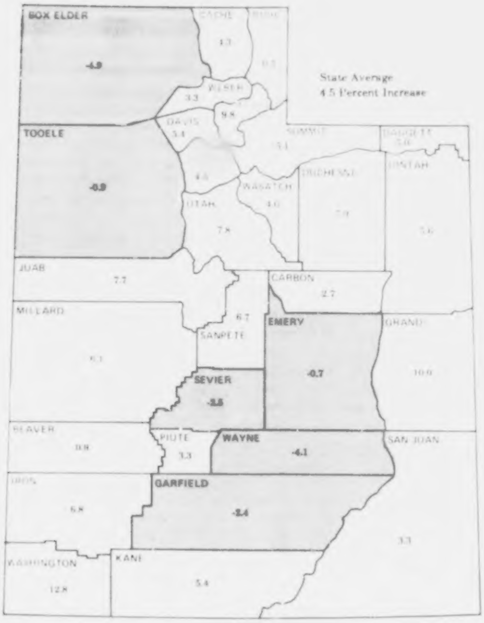
Construction Data:

Bureau of Economic Research, University of Utah, *Utah Construction Report, 4th Quarter Report, 1987, 1988, 1989, 1990* (Salt Lake City, years as indicated).

Miscellaneous Data:

Utah State Tax Commission, *Utah New Car and Truck Sales, First, Second, Third and Fourth Quarters* (Salt Lake City, quarterly releases for years as indicated); and Bureau of Land Management, *1990 BLM Facts and Figures for Utah* (Salt Lake City, June 1991), p. 26. Note: New Car and Truck Registrations by owner's county do not add to state total figures due to vehicles purchased in Utah by nonresidents.

Figure 1
Average Nonagricultural Employment
Percent Change, 1989-1990


BOX ELDER
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CACHE
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RICH
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DUCHESNE
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UINTAH
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UTAH
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JUAB
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CARBON
2.7
MILLARD
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SANPETE
EMERY
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GRAND
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SEVIER
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BEAVER
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PIUTE
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WAYNE
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SAN JUAN
IRON
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GARFIELD
-2.4
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WASHINGTON
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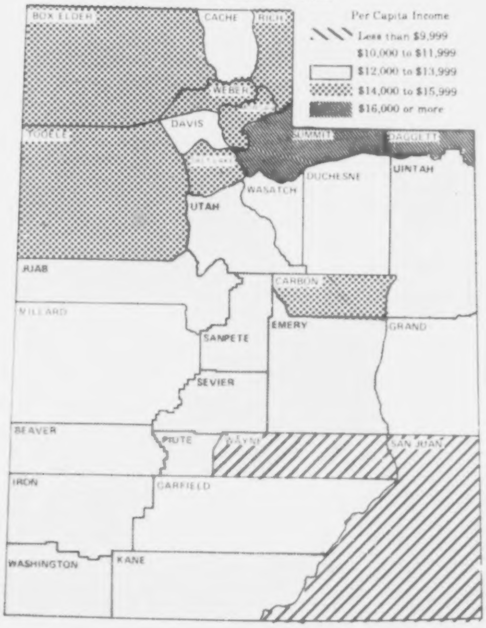
KANE
5.4
State Average
4.5 Percent Increase

Figure 2
1990 Per Capita
Personal Income by County
(dollars)

State Per Capita Income, $14,083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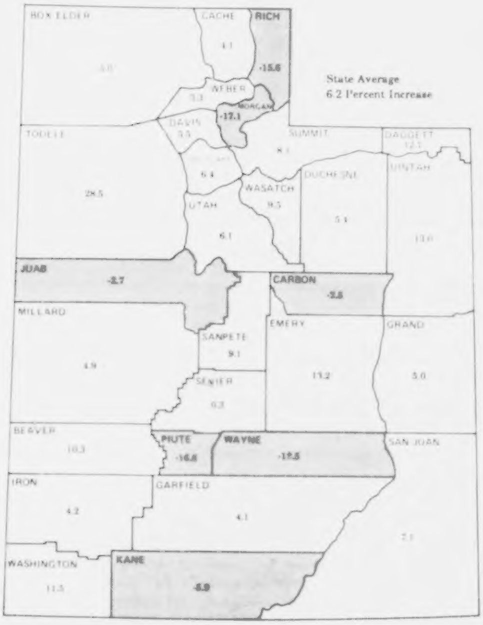
MILLARD
SANPETE
EMERY
GRAND
SEVIER
BEAVER
PIUTE
WAYNE
SAN JUAN
IRON
GARFIELD
WASHINGTON
KANE
Per Capita Income
Less than $9,999
$10,000 to $11,999
$12,000 to $13,999
$14,000 to $15,999
$16,000 or more

Figure 3
Gross Taxable Sales
Percent Change, 1989-1990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DUCHESNE
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CARBON
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MILLARD
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SANPETE
9.1
SEVIER
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EMERY
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GRAND
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BEAVER
10.3
PIUTE
-16.6
WAYNE
-19.5
SAN JUAN
IRON
4.2
GARFIELD
4.1
7.1
WASHINGTON
11.5
KANE
-5.9
State Average
6.2 Percent Increase

SELECTED COUNTY BUSINESS STATISTICS

	1987	1988	1989	1990	Percent Change 1989-90
BEAVER					
Population	4,900	4,800	4,750[r]	4,750[p]	0.0
Labor Market Data:					
Average civilian labor force	2,097	2,049	1,966[r]	1,940[p]	-1.3
Average nonagricultural employment	1,280	1,274	1,269[r]	1,280[p]	0.9
Income Data:					
Average monthly nonagricultural wage ($)	1,176	1,238	1,302	1,272[p]	-2.3
Annual nonagricultural payroll ($ thousands)	18,066	18,930	19,824	19,535[p]	-1.5
Total personal income ($ thousands)[r]	45,579	50,722	55,311	53,600[e]	-3.1
Per capita personal income ($)[r]	9,321	10,683	12,003	11,280[e]	-6.0
Tax Data:					
Total assessed valuation ($ thousands)	193,454	197,000	192,000	211,000	9.9
Property taxes charged, by all taxing units ($ thousands)	2,224	2,271	2,165	2,331	7.7
Gross taxable sales ($ thousands)[b]	20,797	24,817	24,539	27,060	10.3
Net local sales tax allocations ($ thousands)[c]	227	257	261	na	--
Construction (permit-authorized):					
New dwelling units (number)	1	2	12	11	-8.3
Value of new residential construction ($ thousands)	22	96	456	1,026	125.0
Value of new nonresidential construction ($ thousands)	942	229	426	1,005	135.9
Value of total construction ($ thousands)	974	612	1,119	2,590	131.5
Miscellaneous:					
New car and truck registrations by owner's county (number)	93	131	150	137	-8.7
Payment in Lieu of Taxes Act ($ thousands)	244	246	245	229	-6.5
BOX ELDER					
Population	37,800	38,000	36,500[r]	36,500[p]	0.0
Labor Market Data:					
Average civilian labor force	17,538	17,828	17,917[r]	16,783[p]	-6.3
Average nonagricultural employment	15,051	15,674	15,938[r]	15,161[p]	-4.9
Income Data:					
Average monthly nonagricultural wage ($)	2,080	2,114	2,156	2,209[p]	2.5
Annual nonagricultural payroll ($ thousands)	375,584	397,555	412,294	401,914[p]	-2.5
Total personal income ($ thousands)[r]	475,107	509,612	534,164	518,600[e]	-2.9
Per capita personal income ($)[r]	12,518	13,273	13,651	14,210[e]	4.1
Tax Data:					
Total assessed valuation ($ thousands)	1,136,772	1,123,000	1,167,000	1,262,000	8.1
Property taxes charged, by all taxing units ($ thousands)	12,310	12,131	12,729	14,101	10.8
Gross taxable sales ($ thousands)[b]	203,611	202,248	212,780	223,467	5.0
Net local sales tax allocations ($ thousands)[c]	2,017	2,077	2,221	na	--
Construction (permit-authorized):					
New dwelling units (number)	163	113	73	59	-19.2
Value of new residential construction ($ thousands)	10,152	8,263	5,910	5,355	-9.4
Value of new nonresidential construction ($ thousands)	3,937	2,137	6,876	3,141	-54.3
Value of total construction ($ thousands)	16,058	13,626	14,333	10,068	-29.8
Miscellaneous:					
New car and truck registrations by owner's county (number)	1,191	1,148	1,103	1,052	-4.6
Payment in Lieu of Taxes Act ($ thousands)	848	855	853	868	1.8
CACHE					
Population	69,200	70,600	69,200[r]	70,500[p]	1.9
Labor Market Data:					
Average civilian labor force	28,891	29,861	32,053[r]	32,114[p]	0.2
Average nonagricultural employment	23,573	24,811	27,028[r]	28,179[p]	4.3
Income Data:					
Average monthly nonagricultural wage ($)	1,225	1,241	1,248	1,289[p]	3.3
Annual nonagricultural payroll ($ thousands)	346,555	369,427	404,848	435,899[p]	7.7
Total personal income ($ thousands)[r]	684,921	736,234	807,761	870,400[e]	7.8
Per capita personal income ($)[r]	10,377	11,029	11,971	12,350[e]	3.2
Tax Data:					
Total assessed valuation ($ thousands)	1,182,737	1,164,000	1,209,000	1,264,000	4.5
Property taxes charged, by all taxing units ($ thousands)	16,819	16,295	17,034	17,911	5.1
Gross taxable sales ($ thousands)[b]	337,450	364,042	396,496[r]	412,934	4.1
Net local sales tax allocations ($ thousands)[c]	3,413	3,729	3,926	na	--
Construction (permit-authorized):					
New dwelling units (number)	205	182	189	247	30.7
Value of new residential construction ($ thousands)	13,259	12,585	14,429	17,860	23.8
Value of new nonresidential construction ($ thousands)	5,024	9,375	12,675	5,912	-53.4
Value of total construction ($ thousands)	22,554	30,267	29,830	28,235	-5.3
Miscellaneous:					
New car and truck registrations by owner's county (number)	1,668	1,568	1,702	1,617	-5.0
Payment in Lieu of Taxes Act ($ thousands)	179	181	164	180	9.8

CARBON	1987	1988	1989	1990	Percent Change 1989-90
Population	22,500	22,000	20,400[r]	20,200[p]	-1.0
Labor Market Data:					
Average civilian labor force	8,674	8,270	8,496[r]	8,193[p]	-3.6
Average nonagricultural employment	7,292	7,227	7,445[r]	7,644[p]	2.7
Income Data:					
Average monthly nonagricultural wage ($)	1,595	1,624	1,628	1,687[p]	3.6
Annual nonagricultural payroll ($ thousands)	139,634	140,879	145,447	154,758[p]	6.4
Total personal income ($ thousands)[r]	266,204	275,227	290,420	306,100[e]	5.4
Per capita personal income ($)[r]	11,981	12,769	13,691	15,150[e]	10.7
Tax Data:					
Total assessed valuation ($ thousands)	742,211	745,000	739,000	701,000	-5.1
Property taxes charged, by all taxing units ($ thousands)	10,721	10,736	10,613	10,185	-4.0
Gross taxable sales ($ thousands)[b]	170,424	173,073	193,730	188,911	-2.5
Net local sales tax allocations ($ thousands)[c]	1,651	1,606	1,813	na	--
Construction (permit-authorized):					
New dwelling units (number)	31	20	7	17	142.9
Value of new residential construction ($ thousands)	1,569	681	390	1,411	261.8
Value of new nonresidential construction ($ thousands)	4,000	2,165	2,978	7,768	160.8
Value of total construction ($ thousands)	6,093	4,120	4,891	10,001	104.5
Miscellaneous:					
New car and truck registrations by owner's county (number)	618	682	661	664	0.5
Payment in Lieu of Taxes Act ($ thousands)	336	339	339	339	0.0
DAGGETT					
Population	700	700	650[r]	700[p]	7.7
Labor Market Data:					
Average civilian labor force	464	430	446[r]	456[p]	2.2
Average nonagricultural employment	310	301	317[r]	333[p]	5.0
Income Data:					
Average monthly nonagricultural wage ($)	1,086	1,174	1,158	1,305[p]	12.7
Annual nonagricultural payroll ($ thousands)	4,032	4,239	4,402	5,217[p]	18.5
Total personal income ($ thousands)[r]	8,515	9,591	10,219	12,000[e]	17.4
Per capita personal income ($)[r]	11,131	12,891	13,903	17,110[e]	23.1
Tax Data:					
Total assessed valuation ($ thousands)	97,417	107,000	123,000	114,000	-7.3
Property taxes charged, by all taxing units ($ thousands)	891	971	1,071	1,114	4.0
Gross taxable sales ($ thousands)[b]	3,713	5,294	7,096	7,952	12.1
Net local sales tax allocations ($ thousands)[c]	41	51	62	na	--
Construction (permit-authorized):					
New dwelling units (number)	0	0	0	0	--
Value of new residential construction ($ thousands)	0	0	0	0	--
Value of new nonresidential construction ($ thousands)	39	12	26	17	-34.6
Value of total construction ($ thousands)	61	59	56	80	42.9
Miscellaneous:					
New car and truck registrations by owner's county (number)	32	36	28	30	7.1
Payment in Lieu of Taxes Act ($ thousands)	36	36	35	50	42.9
DAVIS					
Population	179,000	184,000	186,000[r]	188,000[p]	1.1
Labor Market Data:					
Average civilian labor force	76,060	76,948	79,765[r]	79,339[p]	-0.5
Average nonagricultural employment	52,187	52,981	56,675[r]	59,738[p]	5.4
Income Data:					
Average monthly nonagricultural wage ($)	1,590	1,636	1,686	1,711[p]	1.5
Annual nonagricultural payroll ($ thousands)	995,878	1,040,371	1,146,630[r]	1,226,638[p]	7.0
Total personal income ($ thousands)[r]	2,026,639	2,152,287	2,338,337	2,514,900[e]	7.6
Per capita personal income ($)[r]	11,184	11,648	12,430	13,380[e]	7.6
Tax Data:					
Total assessed valuation ($ thousands)	3,199,004	3,237,000	3,315,000	3,453,000	4.2
Property taxes charged, by all taxing units ($ thousands)	52,255	52,909	54,916	57,917	5.5
Gross taxable sales ($ thousands)[b]	868,370	912,829	1,002,316	1,057,361	5.5
Net local sales tax allocations ($ thousands)[c]	8,784	9,329	10,104	na	--
Construction (permit-authorized):					
New dwelling units (number)	1,089	819	803	949	18.2
Value of new residential construction ($ thousands)	90,624	63,991	70,005	88,751	26.8
Value of new nonresidential construction ($ thousands)	49,347	36,284	42,717	31,261	-26.8
Value of total construction ($ thousands)	150,806	110,444	121,071	129,462	6.9
Miscellaneous:					
New car and truck registrations by owner's county (number)	6,473	6,534	6,326	5,954	-5.9
Payment in Lieu of Taxes Act ($ thousands)	21	23	22	22	0.0

	1987	1988	1989	1990	Percent Change 1989-90
DUCHESNE					
Population	13,700	13,100	12,800[r]	12,600[p]	-1.6
Labor Market Data:					
Average civilian labor force	5,388	4,577	4,470[r]	4,462[p]	-0.2
Average nonagricultural employment	3,769	3,420	3,465[r]	3,670[p]	5.9
Income Data:					
Average monthly nonagricultural wage ($)	1,452	1,363	1,401	1,420[p]	1.4
Annual nonagricultural payroll ($ thousands)	65,675	55,942	58,249	62,531[p]	7.4
Total personal income ($ thousands)[r]	136,168	136,670	143,822	153,900[e]	7.0
Per capita personal income ($)[r]	9,538	10,110	11,079	12,210[e]	10.2
Tax Data:					
Total assessed valuation ($ thousands)	859,700	875,000	927,000	781,000	-15.7
Property taxes charged, by all taxing units ($ thousands)	9,851	10,026	10,353	9,553	-7.7
Gross taxable sales ($ thousands)[b]	77,504	71,468	77,103	81,243	5.4
Net local sales tax allocations ($ thousands)[c]	766	732	795	na	--
Construction (permit-authorized):					
New dwelling units (number)	43	18	13	10	-23.1
Value of new residential construction ($ thousands)	1,486	442	425	362	-14.8
Value of new nonresidential construction ($ thousands)	315	1,067	3,345	841	-74.9
Value of total construction ($ thousands)	2,193	3,529	3,897	1,680	-56.9
Miscellaneous:					
New car and truck registrations by owner's county (number)	343	347	413	417	1.0
Payment in Lieu of Taxes Act ($ thousands)	442	444	335	389	16.1
EMERY					
Population	11,600	11,300	10,400[r]	10,300[p]	-1.0
Labor Market Data:					
Average civilian labor force	3,886	3,529	3,663[r]	3,543[p]	-3.3
Average nonagricultural employment	3,509	3,446	3,653[r]	3,629[p]	-0.7
Income Data:					
Average monthly nonagricultural wage ($)	2,066	2,070	2,205	2,202[p]	-0.1
Annual nonagricultural payroll ($ thousands)	86,979	85,604	96,655	95,887[p]	-0.8
Total personal income ($ thousands)[r]	99,642	102,069	109,508	111,100[e]	1.5
Per capita personal income ($)[r]	8,560	9,019	9,884	10,780[e]	9.1
Tax Data:					
Total assessed valuation ($ thousands)	1,547,634	1,537,000	1,386,000	1,474,000	6.3
Property taxes charged, by all taxing units ($ thousands)	22,263	22,098	21,957	21,843	-0.5
Gross taxable sales ($ thousands)[b]	42,287	50,216	53,949	61,077	13.2
Net local sales tax allocations ($ thousands)[c]	501	620	650	na	--
Construction (permit-authorized):					
New dwelling units (number)	7	3	3	0	-100.0
Value of new residential construction ($ thousands)	443	171	310	0	-100.0
Value of new nonresidential construction ($ thousands)	81	410	106	48	-54.7
Value of total construction ($ thousands)	704	936	466	98	-79.0
Miscellaneous:					
New car and truck registrations by owner's county (number)	254	278	318	302	-5.0
Payment in Lieu of Taxes Act ($ thousands)	408	411	391	367	-6.1
GARFIELD					
Population	4,050	4,050	4,000[r]	3,950[p]	-1.3
Labor Market Data:					
Average civilian labor force	1,528	1,483	1,596[r]	1,509[p]	-5.5
Average nonagricultural employment	1,355	1,387	1,511[r]	1,474[p]	-2.4
Income Data:					
Average monthly nonagricultural wage ($)	1,082	1,146	1,148	1,207[p]	5.1
Annual nonagricultural payroll ($ thousands)	17,599	19,074	20,820	21,348[p]	2.5
Total personal income ($ thousands)[r]	41,482	44,922	49,027	50,300[e]	2.6
Per capita personal income ($)[r]	10,037	11,024	11,975	12,740[e]	6.4
Tax Data:					
Total assessed valuation ($ thousands)	161,915	168,000	137,000	145,000	5.8
Property taxes charged, by all taxing units ($ thousands)	1,992	2,041	1,835	1,843	0.4
Gross taxable sales ($ thousands)[b]	27,387	30,466	33,053	34,398	4.1
Net local sales tax allocations ($ thousands)[c]	257	290	296	na	--
Construction (permit-authorized):					
New dwelling units (number)	23	19	6	8	33.3
Value of new residential construction ($ thousands)	926	996	194	377	94.3
Value of new nonresidential construction ($ thousands)	2,406	1,481	2,183	1,345	-38.4
Value of total construction ($ thousands)	3,521	2,732	2,431	1,913	-21.3
Miscellaneous:					
New car and truck registrations by owner's county (number)	108	117	152	143	-5.9
Payment in Lieu of Taxes Act ($ thousands)	208	210	205	205	0.0

GRAND

	1987	1988	1989	1990	Percent Change 1989-90
Population	6,700	6,550	6,700[r]	6,600[p]	-1.5
Labor Market Data:					
Average civilian labor force	2,815	2,711	2,954[r]	3,088[p]	4.5
Average nonagricultural employment	2,029	2,025	2,212[r]	2,433[p]	10.0
Income Data:					
Average monthly nonagricultural wage ($)	1,167	1,230	1,153	1,154[p]	0.1
Annual nonagricultural payroll ($ thousands)	28,400	29,890	30,628	33,705[p]	10.0
Total personal income ($ thousands)[r]	74,320	79,555	83,859	90,200[e]	7.6
Per capita personal income ($)[r]	11,244	12,151	13,307	13,670[e]	2.7
Tax Data:					
Total assessed valuation ($ thousands)	262,252	268,000	251,000	244,000	-2.8
Property taxes charged, by all taxing units ($ thousands)	3,590	3,667	3,493	3,524	0.9
Gross taxable sales ($ thousands)[b]	50,165	60,537	65,594	68,867	5.0
Net local sales tax allocations ($ thousands)[c]	475	553	583	na	--
Construction (permit-authorized):					
New dwelling units (number)	4	9	4	16	300.0
Value of new residential construction ($ thousands)	133	249	163	960	489.0
Value of new nonresidential construction ($ thousands)	1,104	470	917	2,744	199.2
Value of total construction ($ thousands)	1,843	1,234	1,246	3,944	216.5
Miscellaneous:					
New car and truck registrations by owner's county (number)	151	181	172	152	-11.6
Payment in Lieu of Taxes Act ($ thousands)	324	327	307	306	-0.3

IRON

	1987	1988	1989	1990	Percent Change 1989-90
Population	19,500	19,200	20,400[r]	20,900[p]	2.5
Labor Market Data:					
Average civilian labor force	8,429	8,381	8,969[r]	9,276[p]	3.4
Average nonagricultural employment	6,364	6,257	7,122[r]	7,609[p]	6.8
Income Data:					
Average monthly nonagricultural wage ($)	1,089	1,128	1,203	1,281[p]	6.5
Annual nonagricultural payroll ($ thousands)	83,189	88,382	102,834	116,957[p]	13.7
Total personal income ($ thousands)[r]	168,428	180,831	202,715	235,800[e]	16.3
Per capita personal income ($)[r]	8,681	9,418	10,661	11,280[e]	5.8
Tax Data:					
Total assessed valuation ($ thousands)	663,528	629,000	591,000	587,000	-0.7
Property taxes charged, by all taxing units ($ thousands)	9,083	8.603	8,683	8,704	0.2
Gross taxable sales ($ thousands)[b]	139,310	149,519	164,788[r]	171,647	4.2
Net local sales tax allocations ($ thousands)[b]	1,303	1,434	1,430	na	--
Construction (permit-authorized):					
New dwelling units (number)	25	34	97	73	-24.7
Value of new residential construction ($ thousands)	1,652	2,601	5,784	5,368	-7.2
Value of new nonresidential construction ($ thousands)	8,042	6,743	6,858	2,757	-59.8
Value of total construction ($ thousands)	10,551	11,815	13,658	8,991	-34.2
Miscellaneous:					
New car and truck registrations by owner's county (number)	521	497	608	639	5.1
Payment in Lieu of Taxes Act ($ thousands)	535	534	533	512	-3.9

JUAB

	1987	1988	1989	1990	Percent Change 1989-90
Population	5,700	5,700	5,900[r]	5,800[p]	-1.7
Labor Market Data:					
Average civilian labor force	1,997	2,008	2,021[r]	2,021[p]	0.0
Average nonagricultural employment	1,432	1,561	1,638[r]	1,764[p]	7.7
Income Data:					
Average monthly nonagricultural wage ($)	955	1,035	1,088	1,097[p]	0.8
Annual nonagricultural payroll ($ thousands)	16,404	19,381	21,397	23,216[p]	8.5
Total personal income ($ thousands)[r]	48,554	53,610	57,483	63,300[e]	10.1
Per capita personal income ($)[r]	8,303	9,397	10,291	10,920[e]	6.1
Tax Data:					
Total assessed valuation ($ thousands)	230,097	225,000	233,000	226,000	-3.0
Property taxes charged, by all taxing units ($ thousands)	2,903	2,837	3,061	2,976	-2.8
Gross taxable sales ($ thousands)[b]	33,796	28,310	31,314	30,473	-2.7
Net local sales tax allocations ($ thousands)[c]	337	325	317	na	--
Construction (permit-authorized):					
New dwelling units (number)	3	13	2	8	300.0
Value of new residential construction ($ thousands)	225	498	67	291	334.3
Value of new nonresidential construction ($ thousands)	315	416	34	828	2335.3
Value of total construction ($ thousands)	816	1,057	1,178	1,201	2.0
Miscellaneous:					
New car and truck registrations by owner's county (number)	181	155	149	150	0.7
Payment in Lieu of Taxes Act ($ thousands)	273	276	277	272	-1.8

KANE

	1987	1988	1989	1990	Percent Change 1989-90
Population	4,850	4,900	5,200^r	5,150^p	-1.0
Labor Market Data:					
Average civilian labor force	2,439	2,480	2,566^r	2,522^p	-1.7
Average nonagricultural employment	1,397	1,453	1,524^r	1,606^p	5.4
Income Data:					
Average monthly nonagricultural wage ($)	940	1,002	1,011	1,016^p	0.5
Annual nonagricultural payroll ($ thousands)	15,749	17,466	18,502	19,587^p	5.9
Total personal income ($ thousands)^r	48,735	52,862	56,391	60,000^e	6.4
Per capita personal income ($)^r	9,956	10,720	11,189	11,640^e	4.0
Tax Data:					
Total assessed valuation ($ thousands)	170,305	174,000	184,000	185,000	0.5
Property taxes charged, by all taxing units ($ thousands)	1,955	1,996	2,221	2,372	6.8
Gross taxable sales ($ thousands)^b	35,929	40,690	46,433	43,672	-5.9
Net local sales tax allocations ($ thousands)^r	332	365	393	na	--
Construction (permit-authorized):					
New dwelling units (number)	59	57	14	30	114.3
Value of new residential construction ($ thousands)	2,298	2,446	848	1,782	110.1
Value of new nonresidential construction ($ thousands)	1,518	1,449	2,528	1,867	-26.1
Value of total construction ($ thousands)	4,495	4,377	4,692	4,007	-14.6
Miscellaneous:					
New car and truck registrations by owners county (number)	103	126	116	118	1.7
Payments in Lieu of Taxes Act ($ thousands)	214	213	231	235	1.7

MILLARD

	1987	1988	1989	1990	Percent Change 1989-90
Population	13,000	12,900	11,300^r	11,300^p	0.0
Labor Market Data:					
Average civilian labor force	5,766	5,253	5,267^r	5,197^p	-1.3
Average nonagricultural employment	3,432	3,191	3,256^r	3,454^p	6.1
Income Data:					
Average monthly nonagricultural wage ($)	1,579	1,635	1,671	1,702^p	1.9
Annual nonagricultural payroll ($ thousands)	65,020	62,598	65,293	70,565^p	8.1
Total personal income ($ thousands)^r	119,224	123,848	130,447	140,500^e	7.7
Per capita personal income ($)^r	9,279	10,035	11,127	12,430^e	11.7
Tax Data:					
Total assessed valuation ($ thousands)	2,828,600	2,824,000	2,703,000	2,808,000	3.9
Property taxes charged, by all taxing units ($ thousands)	16,263	16,205	28,171	30,650	8.8
Gross taxable sales ($ thousands)^b	38,241	180,515	70,042^r	73,472	4.9
Net local sales tax allocations ($ thousands)^r	796	1,451	649	na	--
Construction (permit-authorized):					
New dwelling units (number)	20	12	6	10	66.7
Value of new residential construction ($ thousands)	1,220	714	250	718	187.2
Value of new nonresidential construction ($ thousands)	2,131	293	508	323	-36.4
Value of total construction ($ thousands)	3,841	1,691	1,159	1,946	67.9
Miscellaneous:					
New car and truck registrations by owners county (number)	276	321	331	337	1.8
Payments in Lieu of Taxes Act ($ thousands)	404	407	424	384	-9.4

MORGAN

	1987	1988	1989	1990	Percent Change 1989-90
Population	5,650	5,700	5,450^r	5,550^p	1.8
Labor Market Data:					
Average civilian labor force	1,650	1,611	1,662^r	1,648^p	-0.8
Average nonagricultural employment	885	884	929^r	1,020^p	9.8
Income Data:					
Average monthly nonagricultural wage ($)	1,497	1,476	1,395	1,452^p	4.1
Annual nonagricultural payroll ($ thousands)	15,882	15,662	15,561	17,769^p	14.2
Total personal income ($ thousands)^r	67,373	70,433	73,227	81,700^e	11.6
Per capita personal income ($)^r	12,472	12,973	13,220	14,710^e	11.3
Tax Data:					
Total assessed valuation ($ thousands)	146,129	145,000	148,000	165,000	11.5
Property taxes charged, by all taxing units ($ thousands)	2,030	2,019	2,093	2,226	6.4
Gross taxable sales ($ thousands)^b	19,607	18,812	23,363	19,369	-17.1
Net local sales tax allocations ($ thousands)^r	220	242	240	na	--
Construction (permit-authorized):					
New dwelling units (number)	26	20	22	21	-4.5
Value of new residential construction ($ thousands)	1,621	1,113	2,025	1,805	-10.9
Value of new nonresidential construction ($ thousands)	345	3,983	667	220	-67.0
Value of total construction ($ thousands)	2,226	5,894	2,875	2,634	-8.4
Miscellaneous:					
New car and truck registrations by owners county (number)	179	281	231	209	-9.5
Payments in Lieu of Taxes Act ($ thousands)	12	10	10	11	10.0

	1987	1988	1989	1990	Percent Change 1989-90
PIUTE					
Population	1,550	1,550	1,300[r]	1,250[p]	-3.8
Labor Market Data:					
Average civilian labor force	414	394	352[r]	374[p]	6.3
Average nonagricultural employment	196	181	184[r]	190[p]	3.3
Income Data:					
Average monthly nonagricultural wage ($)	1,009	1,040	1,005	1,044[p]	3.9
Annual nonagricultural payroll ($ thousands)	2,360	2,264	2,219	2,380[p]	7.3
Total personal income ($ thousands)[f]	11,958	12,661	13,053	13,600[e]	4.2
Per capita personal income ($)[f]	8,368	8,922	9,257	10,900[e]	17.7
Tax 'Data:					
Total assessed valuation ($ thousands)	28,441	29,000	31,000	36,000	16.1
Property taxes charged, by all taxing units ($ thousands)	279	282	342	469	37.1
Gross taxable sales ($ thousands)[b]	2,637	2,456	3,347	2,784	-16.8
Net local sales tax allocations ($ thousands)[c]	39	40	47	na	--
Construction (permit-authorized):					
New dwelling units (number)	2	1	1	0	-100.0
Value of new residential construction ($ thousands)	115	55	30	0	-100.0
Value of new nonresidential construction ($ thousands)	18	40	0	0	--
Value of total construction ($ thousands)	133	95	30	0	-100.0
Miscellaneous:					
New car and truck registrations by owner's county (number)	23	22	29	33	13.8
Payment in Lieu of Taxes Act ($ thousands)	66	67	69	62	-10.1
RICH					
Population	1,950	1,850	1,750[r]	1,750[p]	0.0
Labor Market Data:					
Average civilian labor force	714	854	843[r]	803[p]	-4.7
Average nonagricultural employment	297	349	365[r]	367[p]	0.5
Income Data:					
Average monthly nonagricultural wage ($)	1,017	943	927	977[p]	5.4
Annual nonagricultural payroll ($ thousands)	3,615	3,941	4,066	4,303[p]	5.8
Total personal income ($ thousands)[f]	20,925	23,311	24,113	25,400[e]	5.3
Per capita personal income ($)[f]	9,833	11,546	12,526	14,500[e]	15.8
Tax Data:					
Total assessed valuation ($ thousands)	156,772	158,000	151,000	152,000	0.7
Property taxes charged, by all taxing units ($ thousands)	1,592	1,608	1,572	1,611	2.5
Gross taxable sales ($ thousands)[b]	6,831	6,026	9,840	8,308	-15.6
Net local sales tax allocations ($ thousands)[c]	78	86	104	na	--
Construction (permit-authorized):					
New dwelling units (number)	0	0	0	0	--
Value of new residential construction ($ thousands)	0	0	0	0	--
Value of new nonresidential construction ($ thousands)	0	0	0	0	--
Value of total construction ($ thousands)	0	0	0	0	--
Miscellaneous:					
New car and truck registrations by owner's county (number)	36	44	37	45	21.6
Payment in Lieu of Taxes Act ($ thousands)	122	123	108	96	-11.1
SALT LAKE					
Population	701,000	705,000	719,000[r]	728,000[p]	1.3
Labor Market Data:					
Average civilian labor force	349,848	347,657	359,736[r]	357,308[p]	-0.7
Average nonagricultural employment	333,039	340,126	352,870[r]	368,701[p]	4.5
Income Data:					
Average monthly nonagricultural wage ($)	1,598	1,654	1,696	1,761[p]	3.8
Annual nonagricultural payroll ($ thousands)	6,388,527	6,750,391	7,180,861	7,789,536[p]	8.5
Total personal income ($ thousands)[f]	9,120,516	9,675,789	10,440,773	11,259,300[e]	7.8
Per capita personal income ($)[f]	12,769	13,438	14,315	15,470[e]	8.1
Tax Data:					
Total assessed valuation ($ thousands)	18,686,759	18,636,000	18,385,000	19,335,000	5.2
Property taxes charged, by all taxing units ($ thousands)	343,014	342,011	335,722	349,990	4.2
Gross taxable sales ($ thousands)[b]	6,141,662	6,493,023	6,845,568[r]	7,282,384	6.4
Net local sales tax allocations ($ thousands)[c]	53,416	58,349	64,866	na	--
Construction (permit-authorized):					
New dwelling units (number)	2,803	2,139	1,970	2,424	23.0
Value of new residential construction ($ thousands)	186,978	154,090	151,001	197,456	30.8
Value of new nonresidential construction ($ thousands)	226,985	116,034	197,713	205,370	3.9
Value of total construction ($ thousands)	499,379	356,933	439,856	561,497	27.7
Miscellaneous:					
New car and truck registrations by owner's county (number)	26,398	27,931	27,402	28,082	2.5
Payment in Lieu of Taxes Act ($ thousands)	62	63	60	61	1.7

	1987	1988	1989	1990	Percent Change 1989-90
SAN JUAN					
Population	12,900	12,900	12,600[r]	12,600[p]	0.0
Labor Market Data:					
Average civilian labor force	3,669	3,744	3,972[r]	3,960[p]	-0.3
Average nonagricultural employment	2,954	3,030	3,253[r]	3,360[p]	3.3
Income Data:					
Average monthly nonagricultural wage ($)	1,276	1,355	1,321	1,327[p]	0.5
Annual nonagricultural payroll ($ thousands)	45,210	49,282	51,566	53,517[p]	3.8
Total personal income ($ thousands)[f]	83,599	89,463	95,112	98,400[e]	3.5
Per capita personal income ($)[f]	7,272	7,696	8,179	7,810[e]	-4.5
Tax Data:					
Total assessed valuation ($ thousands)	684,752	676,000	684,000	638,000	-6.7
Property taxes charged, by all taxing units ($ thousands)	8,550	8,435	8,532	8,231	-3.5
Gross taxable sales ($ thousands)[b]	48,240	44,523	57,683	61,798	7.1
Net local sales tax allocations ($ thousands)[c]	564	594	628	na	--
Construction (permit-authorized):					
New dwelling units (number)	3	3	8	1	-87.5
Value of new residential construction ($ thousands)	208	231	347	60	-82.7
Value of new nonresidential construction ($ thousands)	118	171	662	1,586	139.6
Value of total construction ($ thousands)	488	546	1,275	1,891	48.3
Miscellaneous:					
New car and truck registrations by owner's county (number)	115	146	131	133	1.5
Payment in Lieu of Taxes Act ($ thousands)	383	385	363	381	5.0
SANPETE					
Population	16,600	16,700	16,000[r]	16,300[p]	1.9
Labor Market Data:					
Average civilian labor force	6,306	6,145	6,150[r]	6,206[p]	0.9
Average nonagricultural employment	3,698	3,722	3,873[r]	4,134[p]	6.7
Income Data:					
Average monthly nonagricultural wage ($)	994	1,030	1,035	1,061[p]	2.5
Annual nonagricultural payroll ($ thousands)	44,110	46,002	48,095	52,651[p]	9.5
Total personal income ($ thousands)[f]	140,084	152,616	159,406	174,800[e]	9.7
Per capita personal income ($)[f]	8,554	9,286	9,745	10,720[e]	10.0
Tax Data:					
Total assessed valuation ($ thousands)	311,316	311,000	306,000	314,000	2.6
Property taxes charged, by all taxing units ($ thousands)	4,610	4,601	4,213	4,958	17.7
Gross taxable sales ($ thousands)[b]	54,334	53,767	57,743	62,972	9.1
Net local sales tax allocations ($ thousands)[c]	645	664	684	na	--
Construction (permit-authorized):					
New dwelling units (number)	36	31	32	39	21.9
Value of new residential construction ($ thousands)	2,041	1,485	1,717	1,704	-0.8
Value of new nonresidential construction ($ thousands)	1,051	2,472	2,340	1,533	-34.5
Value of total construction ($ thousands)	3,716	4,424	4,445	4,500	1.2
Miscellaneous:					
New car and truck registrations by owner's county (number)	336	357	416	374	-10.1
Payment in Lieu of Taxes Act ($ thousands)	381	384	389	385	-1.0
SEVIER					
Population	15,900	15,900	15,400[r]	15,400[p]	0.0
Labor Market Data:					
Average civilian labor force	6,527	6,407	6,439[r]	6,041[p]	-6.2
Average nonagricultural employment	4,914	4,955	5,093[r]	4,965[p]	-2.5
Income Data:					
Average monthly nonagricultural wage ($)	1,309	1,312	1,394	1,409[p]	1.1
Annual nonagricultural payroll ($ thousands)	77,202	78,022	85,191	83,946[p]	-1.5
Total personal income ($ thousands)[f]	158,398	163,801	179,055	176.600[e]	-1.4
Per capita personal income ($)[f]	10,344	10,755	11,881	11,470[e]	-3.5
Tax Data:					
Total assessed valuation ($ thousands)	419,984	419,000	417,000	429,000	2.9
Property taxes charged, by all taxing units ($ thousands)	5,218	5,207	5,192	5,344	2.9
Gross taxable sales ($ thousands)[b]	101,732	101,743	124,588[r]	124,878	0.2
Net local sales tax allocations ($ thousands)[c]	982	1,027	1,208	na	--
Construction (permit-authorized):					
New dwelling units (number)	18	15	15	10	-33.3
Value of new residential construction ($ thousands)	1,399	881	898	640	-28.7
Value of new nonresidential construction ($ thousands)	748	435	1,167	1,212	3.9
Value of total construction ($ thousands)	2,910	1,661	2,515	3,351	33.2
Miscellaneous:					
New car and truck registrations by owner's county (number)	355	456	482	475	-1.5
Payment in Lieu of Taxes Act ($ thousands)	447	452	449	422	-6.0

	1987	1988	1989	1990	Percent Change 1989-90
SUMMIT					
Population	13,300	13,400	15,100[r]	15,700[p]	4.0
Labor Market Data:					
Average civilian labor force	7,693	7,888	8,393[r]	8,493[p]	1.2
Average nonagricultural employment	6,578	6,985	7,601[r]	7,989[p]	5.1
Income Data:					
Average monthly nonagricultural wage ($)	1,064	1,163	1,183	1,212[p]	2.5
Annual nonagricultural payroll ($ thousands)	83,946	97,496	107,875	116,173[p]	7.7
Total personal income ($ thousands)[r]	231,582	254,387	279,307	302,300[e]	8.2
Per capita personal income ($)[r]	17,478	18,379	19,476	19,250[e]	-1.2
Tax Data:					
Total assessed valuation ($ thousands)	2,407,626	2,386,000	2,578,000	1,952,000	-24.3
Property taxes charged, by all taxing units ($ thousands)	27,945	27,379	29,623	27,170	-8.3
Gross taxable sales ($ thousands)[b]	185,063	200,885	228,849	247,448	8.1
Net local sales tax allocations ($ thousands)[c]	1,541	1,748	1,992	na	--
Construction (permit-authorized):					
New dwelling units (number)	206	239	318	382	20.1
Value of new residential construction ($ thousands)	18,531	24,111	39,993	50,915	27.3
Value of new nonresidential construction ($ thousands)	3,056	6,418	8,487	12,696	49.6
Value of total construction ($ thousands)	26,390	33,801	54,649	68,324	25.0
Miscellaneous:					
New car and truck registrations by owner's county (number)	750	763	893	971	8.7
Payments in Lieu of Taxes Act ($ thousands)	334	340	325	332	2.2
TOOELE					
Population	28,100	27,800	26,400[r]	26,700[p]	1.1
Labor Market Data:					
Average civilian labor force	11,324	11,025	11,519[r]	11,405[p]	-1.0
Average nonagricultural employment	9,993	9,996	10,562[r]	10,465[p]	-0.9
Income Data:					
Average monthly nonagricultural wage ($)	1,890	1,892	1,882	1,934[p]	2.8
Annual nonagricultural payroll ($ thousands)	226,590	226,905	238,527	242,933[p]	1.8
Total personal income ($ thousands)[r]	334,904	351,578	373,453	378,900[e]	1.5
Per capita personal income ($)[r]	11,703	12,270	13,121	14,190[e]	8.1
Tax Data:					
Total assessed valuation ($ thousands)	633,234	635,000	619,000	658,000	6.3
Property taxes charged, by all taxing units ($ thousands)	9,252	9,228	9,516	10,163	6.8
Gross taxable sales ($ thousands)[b]	112,646	120,262	120,598	155,020	28.5
Net local sales tax allocations ($ thousands)[c]	1,259	1,367	1,569	na	--
Construction (permit-authorized):					
New dwelling units (number)	77	66	81	74	-8.6
Value of new residential construction ($ thousands)	5,522	4,261	5,748	5,346	-7.0
Value of new nonresidential construction ($ thousands)	3,368	4,057	9,396	20,460	117.8
Value of total construction ($ thousands)	10,162	8,890	16,340	27,046	65.5
Miscellaneous:					
New car and truck registrations by owner's county (number)	934	1,003	1,052	1,445	37.4
Payments in Lieu of Taxes Act ($ thousands)	710	717	712	714	0.3
UINTAH					
Population	21,800	21,500	22,200[r]	22,200[p]	0.0
Labor Market Data:					
Average civilian labor force	8,625	8,253	8,036[r]	7,920[p]	-1.4
Average nonagricultural employment	6,406	6,450	6,358[r]	6,717[p]	5.6
Income Data:					
Average monthly nonagricultural wage ($)	1,505	1,502	1,509	1,596[p]	5.8
Annual nonagricultural payroll ($ thousands)	115,651	116,216	115,077	128,646[p]	11.8
Total personal income ($ thousands)[r]	212,904	221,680	229,224	251,100[e]	9.5
Per capita personal income ($)[r]	9,288	9,927	10,670	11,310[e]	6.0
Tax Data:					
Total assessed valuation ($ thousands)	1,548,924	1,583,000	1,571,000	1,554,000	-1.1
Property taxes charged, by all taxing units ($ thousands)	18,283	18,706	18,332	18,354	0.1
Gross taxable sales ($ thousands)[b]	145,959	155,750	155,127r	176,047	13.5
Net local sales tax allocations ($ thousands)[c]	1,383	1,535	1,509	na	--
Construction (permit-authorized):					
New dwelling units (number)	7	7	8	6	-25.0
Value of new residential construction ($ thousands)	341	450	650	422	-35.1
Value of new nonresidential construction ($ thousands)	459	1,720	613	5,190	746.7
Value of total construction ($ thousands)	1,669	2,685	1,469	6,716	357.2
Miscellaneous:					
New car and truck registrations by owner's county (number)	498	576	553	630	13.9
Payments in Lieu of Taxes Act ($ thousands)	697	703	614	576	-6.2

	1987	1988	1989	1990	Percent Change 1989-90
UTAH					
Population	58,000	262,000	258,000[r]	266,000[p]	3.1
Labor Market Data:					
Average civilian labor force	99,684	104,688	111,060[r]	117,656[p]	5.9
Average nonagricultural employment	74,478	81,393	87,049[r]	93,847[p]	7.8
Income Data:					
Average monthly nonagricultural wage ($)	1,247	1,318	1,366	1,448[p]	6.0
Annual nonagricultural payroll ($ thousands)	114,541	1,287,758	1,427,439	1,630,695[p]	14.2
Total personal income ($ thousands)[r]	223,478	2,476,226	2,720,691	3,125,700[e]	14.9
Per capita personal income ($)[r]	9,204	10,203	11,191	11,750[e]	5.0
Tax Data:					
Total assessed valuation ($ thousands)	,406,284	4,375,000	4,341,000	4,455,000	2.6
Property taxes charged, by all taxing units ($ thousands)	63,788	63,331	63,536	66,139	4.1
Gross taxable sales ($ thousands)[b]	,255,924	1,366,209	1,530,356[r]	1,644,628	7.5
Net local sales tax allocations ($ thousands)[c]	12,978	13,988	15,358	na	--
Construction (permit-authorized):					
New dwelling units (number)	1,095	799	890	1,298	45.8
Value of new residential construction ($ thousands)	70,670	61,196	75,008	102,185	36.2
Value of new nonresidential construction ($ thousands)	61,939	45,490	45,661	76,332	67.2
Value of total construction ($ thousands)	150,902	127,474	150,468	210,217	39.7
Miscellaneous:					
New car and truck registrations by owner's county (number)	5,619	6,087	6,540	6,294	-3.8
Payment in Lieu of Taxes Act ($ thousands)	498	504	506	471	-6.9
WASATCH					
Population	9,700	9,800	10,000[r]	10,100[p]	1.0
Labor Market Data:					
Average civilian labor force	4,525	4,650	4,698[r]	4,702[p]	0.1
Average nonagricultural employment	2,160	2,358	2,435[r]	2,532[p]	4.0
Income Data:					
Average monthly nonagricultural wage ($)	1,032	1,254	1,180	1,220[p]	3.4
Annual nonagricultural payroll ($ thousands)	26,727	35,493	34,478	37,066[p]	7.5
Total personal income ($ thousands)[r]	97,042	108,486	112,627	123,100[e]	9.3
Per capita personal income ($)[r]	10,053	11,002	11,358	12,190[e]	7.3
Tax Data:					
Total assessed valuation ($ thousands)	296,732	296,000	317,000	334,000	5.4
Property taxes charged, by all taxing units ($ thousands)	3,789	3,784	4,213	4,465	6.0
Gross taxable sales ($ thousands)[b]	41,178	45,340	50,808[r]	55,555	9.3
Net local sales tax allocations ($ thousands)[c]	434	493	528	na	--
Construction (permit-authorized):					
New dwelling units (number)	2[d]	40	24	29	20.8
Value of new residential construction ($ thousands)	88[d]	2,112	1,821	2,941	61.5
Value of new nonresidential construction ($ thousands)	0[d]	209	2,131	2,992	40.4
Value of total construction ($ thousands)	108[d]	2,513	4,406	6,334	43.8
Miscellaneous:					
New car and truck registrations by owner's county (number)	289	253	332	346	4.2
Payment in Lieu of Taxes Act ($ thousands)	320	327	326	294	-9.8
WASHINGTON					
Population	41,300	43,000	47,200[r]	49,100[p]	4.0
Labor Market Data:					
Average civilian labor force	15,706	16,502	18,220[r]	19,571[p]	7.4
Average nonagricultural employment	10,896	11,740	13,091[r]	14,763[p]	12.8
Income Data:					
Average monthly nonagricultural wage ($)	1,133	1,159	1,193	1,233[p]	3.4
Annual nonagricultural payroll ($ thousands)	148,099	163,291	187,386	218,446[p]	16.6
Total personal income ($ thousands)[r]	398,137	430,101	483,984	571,100[e]	18.0
Per capita personal income ($)[r]	9,416	9,787	10,840	11,630[e]	7.3
Tax Data:					
Total assessed valuation ($ thousands)	,071,313	1,065,000	1,153,000	1,184,000	2.7
Property taxes charged, by all taxing units ($ thousands)	15,571	15,477	16,738	17,199	2.8
Gross taxable sales ($ thousands)[b]	290,477	316,165	365,048	407,050	11.5
Net local sales tax allocations ($ thousands)[c]	2,514	2,802	3,235	na	--
Construction (permit-authorized):					
New dwelling units (number)	533	493	482	805	67.0
Value of new residential construction ($ thousands)	32,367	31,823	31,938	52,914	65.7
Value of new nonresidential construction ($ thousands)	14,771	13,323	16,621	14,697	-11.6
Value of total construction ($ thousands)	50,793	48,827	54,871	71,505	30.3
Miscellaneous:					
New car and truck registrations by owner's county (number)	1,094	1,085	1,568	1,641	4.7
Payment in Lieu of Taxes Act ($ thousands)	777	774	832	829	-0.4

	1987	1988	1989	1990	Percent Change 1989-90
WAYNE					
Population	2,050	2,100	2,200[r]	2,150[p]	-2.3
Labor Market Data:					
Average civilian labor force	1,087	1,042	1,067[r]	1,003[p]	-6.0
Average nonagricultural employment	514	516	566[r]	543[p]	-4.1
Income Data:					
Average monthly nonagricultural wage ($)	1,252	1,106	955	1,019[p]	6.7
Annual nonagricultural payroll ($ thousands)	7,724	6,848	6,480	6,639[p]	2.5
Total personal income ($ thousands)[r]	20,695	20,905	20,823	20,900[e]	0.4
Per capita personal income ($)[r]	9,785	10,133	10,207	9,700[e]	-5.0
Tax Data:					
Total assessed valuation ($ thousands)	49,472	52,000	59,000	57,000	-3.4
Property taxes charged, by all taxing units ($ thousands)	568	584	652	638	-2.1
Gross taxable sales ($ thousands)[b]	7,859	8,793	11,933	10,440	-12.5
Net local sales tax allocations ($ thousands)[c]	89	205	110	na	--
Construction (permit-authorized):					
New dwelling units (number)	2	3	0	0	--
Value of new residential construction ($ thousands)	33	10	0	0	--
Value of new nonresidential construction ($ thousands)	0	17	87	171	96.6
Value of total construction ($ thousands)	86	297	147	174	18.4
Miscellaneous:					
New car and truck registrations by owner's county (number)	56	65	69	73	5.8
Payments in Lieu of Taxes Act ($ thousands)	104	105	105	105	0.0
WEBER					
Population	157,000	158,000	158,000[r]	159,000[p]	0.6
Labor Market Data:					
Average civilian labor force	73,256	72,336	74,810[r]	74,472[p]	-0.5
Average nonagricultural employment	60,310	62,112	63,964[r]	66,093[p]	3.3
Income Data:					
Average monthly nonagricultural wage ($)	1,349	1,398	1,427	1,516[p]	6.2
Annual nonagricultural payroll ($ thousands)	976,537	1,041,836	1,094,959[r]	1,202,524[p]	9.8
Total personal income ($ thousands)[r]	2,007.552	2,127,073	2,278,722	2,479,700[e]	8.8
Per capita personal income ($)[r]	12,503	13,281	14,148	15,600[e]	10.3
Tax Data:					
Total assessed valuation ($ thousands)	3,382,843	3,392,000	3,393,000	3,519,000	3.7
Property taxes charged, by all taxing units ($ thousands)	56,752	56,886	59,928	59,097	-1.4
Gross taxable sales ($ thousands)[b]	1,144,237	1,175,411	1,228,685[r]	1,265,934	3.0
Net local sales tax allocations ($ thousands)[c]	10,593	11,094	12,500	na	--
Construction (permit-authorized):					
New dwelling units (number)	822	551	552	482	-12.7
Value of new residential construction ($ thousands)	51,284	37,096	37,417	38,746	3.6
Value of new nonresidential construction ($ thousands)	21,383	15,067	21,882	20,632	-5.7
Value of total construction ($ thousands)	101,625	65,425	75,138	77,370	3.0
Miscellaneous:					
New car and truck registrations by owner's county (number)	5,391	5,148	4,992	5,016	0.5
Payments in Lieu of Taxes Act ($ thousands)	512	44	39	43	10.3
STATE TOTALS					
Population	1,680,000	1,695,000	1,705,000[r]	1,729,000[p]	1.4
Labor Market Data:					
Average civilian labor force	757,000	759,000	789,000[r]	792,000[p]	0.4
Average nonagricultural employment	640,298	660,075	692,244[r]	723,660[p]	4.5
Income Data:					
Average monthly nonagricultural wage ($)	1,501	1,549	1,585	1,644[p]	3.7
Annual nonagricultural payroll ($ thousands)	11,535,485	12,271,136	13,147,603	14,274,978[p]	8.6
Total personal income ($ thousands)[r]	19,373,000	20,688,000	22,353,000	24,263,000[p]	8.5
Per capita personal income ($)[r]	11,534	12,233	13,094	14,083[p]	7.6
Tax Data:					
Total assessed valuation ($ thousands)	47,506,209	47,413,000	47,313,923	48,237,834	2.0
Property taxes charged, by all taxing units ($ thousands)	724,363	722,324	735,970	761,108	3.4
Gross taxable sales ($ thousands)[b]	12,188,437	13,016,523	13,892,215	14,760,329	6.2
Net local sales tax allocations ($ thousands)[c]	107,338	116,975	128,076	na	--
Construction (permit-authorized):					
New dwelling units (number)	7,305	5,715	5,632	7,009	24.4
Value of new residential construction ($ thousands)	495,208	412,998	447,821	579,395	29.4
Value of new nonresidential construction ($ thousands)	413,440	272,055	389,603	422,946	8.6
Value of total construction ($ thousands)	1,075,096	846,550	1,008,508	1,245,772	23.5
Miscellaneous:					
New car and truck registrations (number)	54,085	60,664	60,699	61,228	0.9
Payments in Lieu of Taxes Act ($ thousands)	9,897	9,498	9,267	9,126	-1.5

Utah Business Statistics

UTAH DATA	Jan. 1990	Jan. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	23,547	NA	NA	NA	22,507	NA
New Corporations (no.)	611	651	6.5%	503	469	7.1%
New Car, Truck, and Motor Home Sales (no.)	4,801	3,788	-21.1%	5,018	5,062	-0.9%
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	76.40	78.00	2.1%	76.78	72.65	5.7%
Lambs (cwt)	53.00	41.20	-22.3%	47.67	60.13	-20.7%
Milk Wholesale (cwt)	14.90	11.00	-26.2%	12.58	12.78	-1.5%
Alfalfa Hay, Baled (per ton)	85.00	84.00	-1.2%	84.83	84.83	0.0%
Cattle Slaughtered (live weight) (thous. of lbs.)	47,546	45,983	-3.3%	46,699	47,971	-2.7%
Construction						
Total Construction (thous. of dol.) 1	41,876.6	73,475.0	75.5%	85,379.9	79,165.6	7.8%
Residential	23,772.9	30,523.1	28.4%	44,609.8	36,594.3	21.9%
Nonresidential	11,031.1	28,833.3	161.4%	27,430.6	26,522.2	3.4%
Additions, Alterations, and Conversions	7,072.6	14,118.7	99.6%	13,339.5	16,049.1	-16.9%
Total Permit Construction (thous. of dol.) 2	58,361.4	78,573.9	34.6%	105,498.7	84,582.8	24.7%
Residential	26,755.6	33,516.1	25.3%	48,846.3	38,042.1	28.4%
Nonresidential	22,946.2	28,834.3	25.7%	35,736.2	32,525.0	9.9%
Additions, Alterations, and Repairs	8,659.6	16,223.5	87.3%	20,916.2	14,015.7	49.2%
New Dwelling Units (no.)	324	405	25.0%	591	477	24.0%
Employment						
Civilian Labor Force (thous.)	792.5	788.6	-0.5%	797.1	791.8	0.7%
Total Employed Persons	758.0	752.1	-0.8%	761.0	755.0	0.8%
Unemployed Persons	34.5	36.5	5.8%	36.1	36.9	-2.0%
Percent Total Labor Force	4.4	4.6	4.5%	4.5	4.7	-3.2%
Employees on Nonagricultural Payrolls (thous. of jobs)	698.1	728.9	4.4%	726.1	694.1	4.6%
Manufacturing	104.3	107.1	2.7%	106.6	103.4	3.0%
Mining	8.3	8.7	4.8%	8.6	8.2	5.6%
Contract Construction	23.0	24.6	7.0%	27.2	26.0	4.6%
Transportation, Communication, and Utilities	41.3	43.0	4.1%	42.9	41.0	4.6%
Wholesale Trade	36.6	38.2	4.4%	39.9	38.5	3.7%
Retail Trade	128.4	134.1	4.4%	136.1	128.5	5.9%
Finance, Insurance, and Real Estate	33.4	34.6	3.6%	34.2	33.4	2.4%
Services 3	172.9	185.6	7.3%	180.7	168.4	7.3%
Federal Government	39.7	38.3	-3.5%	39.5	40.1	-1.4%
State Government 4	41.9	43.4	3.6%	41.9	40.3	4.1%
Local Government 4	68.3	71.3	4.4%	68.4	66.4	3.1%
Average Weekly Hours						
Manufacturing	39.5	39.4	-0.3%	39.8	39.9	-0.3%
Mining	41.8	45.4	8.6%	44.1	41.1	7.4%
Wholesale Trade	37.1	38.2	3.0%	37.6	37.5	0.3%
Retail Trade	26.4	25.8	-2.3%	26.6	27.4	-2.9%
Amount of Unemployment Compensation (thous. of dol.)	7,098.8	8,560.7	20.6%	5,013.0	5,042.0	-0.6%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	1,909.3	NA	NA	NA	2,161.5	NA
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	323,015.7	NA	NA	NA	173,426.6	NA
Sales and Use Tax	176,836.4	NA	NA	NA	68,032.1	NA
Motor Fuel Tax	10,792.4	NA	NA	NA	11,605.8	NA
Individual Income Tax	77,680.2	NA	NA	NA	54,156.8	NA
Corporation Franchise Tax	-682.3	NA	NA	NA	5,102.0	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,481.4	3,559.5	2.2%	3,612.1	3,821.7	-5.5%
Crude Oil (thous. of bbls.)	2,392.2	2,244.7	-6.2%	2,279.4	2,344.1	-2.8%
Natural Gas (mil. of cu. ft.)	26,569.0	29,168.7	9.8%	26,852.8	23,138.9	16.1%
Coal (thous. short tons)	2,061.0	2,055.0	-0.3%	1,944.0	1,731.0	12.3%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	987,092	997,619	1.1%	999,406	997,871	0.2%
Highway Traffic Count Across State Lines	42,678	45,540	6.7%	44,274	39,994	10.7%
Transient Room Tax (thous. of dol.)	959.5	NA	NA	NA	617.9	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	287.7	333.2	15.8%	1,116.2	1,113.7	0.2%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	509,826	529,536	3.9%	518,797	501,762	3.4%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	189,827	201,579	6.2%	196,052	186,437	5.2%
Electric Customers (Residential)	490,046	NA	NA	NA	484,596	NA
Electric Customers (Commercial)	50,417	NA	NA	NA	48,365	NA
Natural Gas Customers (Residential & Commercial)	484,276	495,990	2.4%	487,632	474,421	2.8%
Natural Gas Customers (Industrial)	568	578	1.8%	574	566	1.5%

Utah Business Statistics

UTAH DATA	Jan. 1990	Jan. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	56.7r	59.2	4.4%	59.3	57.0	4.2%
Unemployment Rate	3.5r	4.3	22.9%	4.3	4.3	-0.6%
Auth. Permit Construction (thous. of dol.)	7,961.5	10,544.2	32.4%	11,003.7	10,404.7	5.8%
New Dwelling Units (no.)	48	47	-2.1%	79	68	15.9%
Postal Receipts (thous. of dol.)	643.0	467.2	-27.3%	646.9	626.7	3.2%
Electric Customers (Residential)	49,935	50,657	1.4%	50,081	49,117	2.0%
Electric Customers (Commercial)	3,787	3,851	1.7%	3,701	3,633	1.9%
Natural Gas Customers (Residential)	52,763	53,944	2.2%	53,094	51,913	2.3%
Natural Gas Customers (Industrial)	56	58	3.6%	57	56	1.6%
Telephone Lines in Service (Mt. Bell)(Residential)	59,259	61,467	3.7%	60,562	57,237	5.8%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,491	13,153	5.3%	12,898	12,053	7.0%
Salt Lake County						
Non-Ag. Employment (thous.)	356.1r	371.4	4.3%	369.5	354.2	4.3%
Unemployment Rate	3.8r	4.0	5.3%	4.0	4.2	-5.1%
Auth. Permit Construction (thous. of dol.)	22,945.5	38,045.4	65.8%	48,049.8	36,393.0	32.0%
New Dwelling Units (no.)	122	129	5.7%	203	166	22.3%
Postal Receipts (thous. of dol.)	8,407.4	7,924.0	-5.7%	7,947.9	8,252.8	-3.7%
Electric Customers (Residential)	246,918	249,948	1.2%	246,976	243,507	1.4%
Electric Customers (Commercial)	21,355	21,490	0.6%	21,202	20,938	1.3%
Natural Gas Customers (Residential)	228,089	231,944	1.7%	229,067	225,055	1.8%
Natural Gas Customers (Industrial)	247	247	0.0%	246	243	1.0%
Telephone Lines in Service (Mt. Bell)(Residential)	239,689	248,956	3.9%	244,380	235,899	3.6%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	115,497	121,940	5.6%	118,737	113,262	4.8%
Utah County						
Non-Ag. Employment (thous.)	88.9r	93.9	5.6%	93.6	87.6	6.9%
Unemployment Rate	3.2r	3.8	18.7%	3.9	4.2	-8.9%
Auth. Permit Construction (thous. of dol.)	9,949.4	12,316.3	23.8%	17,715.3	12,438.2	42.4%
New Dwelling Units (no.)	36	82	127.8%	112	75	49.0%
Postal Receipts (thous. of dol.)	1,541.3	1,522.6	-1.2%	1,685.0	1,465.0	15.0%
Electric Customers (Residential)	53,419	55,040	3.0%	54,091	53,238	1.6%
Electric Customers (Commercial)	7,661	6,168	-19.5%	7,031	6,307	11.5%
Natural Gas Customers (Residential)	64,259	65,904	2.6%	64,727	63,227	2.4%
Natural Gas Customers (Industrial)	73	74	1.4%	74	74	0.3%
Telephone Lines in Service (Mt. Bell)(Residential)	66,703	68,969	3.4%	67,289	66,351	1.4%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	20,058	21,972	9.5%	21,107	20,693	2.0%
Weber County						
Non-Ag. Employment (thous.)	64.8r	66.9	3.2%	66.7	64.1	4.0%
Unemployment Rate	4.8r	5.3	10.4%	5.6	5.5	1.5%
Auth. Permit Construction (thous. of dol.)	3,183.3	2,940.7	-7.6%	6,427.3	6,325.1	1.6%
New Dwelling Units (no.)	18	19	5.6%	40	46	-13.3%
Postal Receipts (thous. of dol.)	787.1	763.2	-3.0%	726.5	693.9	4.7%
Electric Customers (Residential)	54,809	55,701	1.6%	54,953	54,305	1.2%
Electric Customers (Commercial)	5,089	5,322	4.6%	5,119	5,035	1.7%
Natural Gas Customers (Residential)	51,311	52,049	1.4%	51,450	50,659	1.6%
Natural Gas Customers (Industrial)	83	80	-3.6%	82	84	-2.7%
Telephone Lines in Service (Mt. Bell)(Residential)	46,470	47,847	3.0%	47,164	47,371	-0.4%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,943	13,453	3.9%	13,259	12,335	7.5%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA Not Available
r Revised

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture*.
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report*.
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

Utah Business Statistics

UTAH DATA	Feb. 1990	Feb. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	23,547	NA	NA	NA	22,661	NA
New Corporations (no.)	493	501	1.6%	503	482	4.4%
New Car, Truck, and Motor Home Sales (no.)	4,030	3,741	-7.2%	4,994	5,036	-0.8%
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	76.50	77.90	1.8%	76.89	72.86	5.5%
Lambs (cwt)	52.70	39.80	-24.5%	46.59	59.50	-21.7%
Milk Wholesale (cwt)	13.90	10.80	-22.3%	12.33	12.91	-4.5%
Alfalfa Hay, Baled (per ton)	85.00	74.00	-12.9%	83.92	84.75	-1.0%
Cattle Slaughtered (live weight) (thous. of lbs.)	41,816	43,191	3.3%	46,574	47,724	-2.4%
Construction						
Total Construction (thous. of dol.) 1	49,989.0	49,471.8	-1.0%	85,336.8	79,537.6	7.3%
Residential	29,745.3	32,592.4	9.6%	44,847.1	37,440.0	19.8%
Nonresidential	10,011.1	7,748.7	-22.6%	27,242.1	25,682.9	6.1%
Additions, Alterations, and Conversions	10,232.7	9,130.7	-10.8%	13,247.6	16,414.7	-19.3%
Total Permit Construction (thous. of dol.) 2	57,002.4	55,939.3	-1.9%	105,410.1	85,061.0	23.9%
Residential	33,127.2	38,078.3	14.9%	49,258.9	39,069.2	26.1%
Nonresidential	11,970.7	8,909.1	-25.6%	35,481.0	31,491.2	12.7%
Additions, Alterations, and Repairs	11,904.5	8,951.9	-24.8%	20,670.2	14,500.6	42.5%
New Dwelling Units (no.)	395	479	21.3%	598	486	23.0%
Employment						
Civilian Labor Force (thous.)	773.8	794.4	2.7%	797.6	793.0	0.6%
Total Employed Persons	737.8	755.6	2.4%	761.3	756.4	0.6%
Unemployed Persons	36.0	37.8	5.0%	36.3	36.6	-1.0%
Percent Total Labor Force	4.7	4.8	2.1%	4.5	4.6	-2.2%
Employees on Nonagricultural Payrolls (thous. of jobs)	700.7	730.7	4.3%	728.8	696.9	4.6%
Manufacturing	104.4	108.0	3.4%	107.0	103.7	3.1%
Mining	8.3	8.6	3.6%	8.7	8.2	5.2%
Contract Construction	22.8	24.6	7.9%	27.5	26.2	4.8%
Transportation, Communication, and Utilities	41.6	42.1	1.2%	42.9	41.1	4.3%
Wholesale Trade	36.8	38.2	3.8%	39.8	38.5	3.5%
Retail Trade	127.0	132.4	4.3%	136.4	129.0	5.7%
Finance, Insurance, and Real Estate	33.7	34.8	3.3%	34.4	33.5	2.6%
Services 3	174.6	187.4	7.3%	181.9	169.5	7.3%
Federal Government	40.0	38.9	-2.8%	39.4	40.1	-1.6%
State Government 4	42.6	44.0	3.3%	42.0	40.4	3.9%
Local Government 4	68.8	71.7	4.2%	68.7	66.5	3.3%
Average Weekly Hours						
Manufacturing	40.3	39.4	-2.2%	39.8	40.0	-0.6%
Mining	42.2	44.2	4.7%	44.3	41.1	7.7%
Wholesale Trade	36.0	38.0	5.6%	37.8	37.4	1.0%
Retail Trade	25.5	25.3	-0.8%	26.6	27.3	-2.7%
Amount of Unemployment Compensation (thous. of dol.)	6,597.4	7,840.4	18.8%	5,117.5	4,968.9	3.0%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	1,889.9	NA	NA	NA	2,132.1	NA
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	87,724.9	NA	NA	NA	160,009.2	NA
Sales and Use Tax	4,547.7	NA	NA	NA	57,591.3	NA
Motor Fuel Tax	10,552.5	NA	NA	NA	11,656.2	NA
Individual Income Tax	46,066.2	NA	NA	NA	52,513.0	NA
Corporation Franchise Tax	1,352.8	NA	NA	NA	5,255.6	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,057.5	3,394.6	11.0%	3,640.2	3,751.5	-3.0%
Crude Oil (thous. of bbls.)	2,219.0	2,056.6	-7.3%	2,265.9	2,341.8	-3.2%
Natural Gas (mil. of cu. ft.)	23,612.3	25,803.0	9.3%	27,035.4	23,231.1	16.4%
Coal (thous. short tons)	1,899.0	2,004.0	5.5%	1,846.3	1,763.7	4.7%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	926,389	957,695	3.4%	1,002,015	1,002,543	-0.1%
Highway Traffic Count Across State Lines	42,678	45,540	6.7%	44,512	41,107	8.3%
Transient Room Tax (thous. of dol.)	537.9	NA	NA	NA	560.6	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	334.3	378.8	13.3%	1,119.9	1,119.6	0.0%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	511,215	530,534	3.8%	520,407	502,942	3.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	190,706	201,618	5.7%	196,961	186,976	5.3%
Electric Customers (Residential)	488,625	NA	NA	NA	484,994	NA
Electric Customers (Commercial)	50,310	NA	NA	NA	48,557	NA
Natural Gas Customers (Residential & Commercial)	486,405	498,673	2.5%	488,654	475,564	2.8%
Natural Gas Customers (Industrial)	566	579	2.3%	575	567	1.5%

Utah Business Statistics

UTAH DATA	Feb. 1990	Feb. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	56.9r	60.0	5.4%	59.7	57.2	4.3%
Unemployment Rate	3.3r	3.7	12.1%	4.4	4.3	1.4%
Auth. Permit Construction (thous. of dol.)	6,048.9	8,832.0	46.0%	11,235.7	10,532.9	6.7%
New Dwelling Units (no.)	53	73	37.7%	81	70	15.7%
Postal Receipts (thous. of dol.)	645.6	687.4	6.5%	650.4	626.7	3.8%
Electric Customers (Residential)	49,915	50,532	1.2%	50,133	49,292	1.7%
Electric Customers (Commercial)	3,736	3,794	1.6%	3,706	3,647	1.6%
Natural Gas Customers (Residential)	52,932	54,222	2.4%	53,201	52,007	2.3%
Natural Gas Customers (Industrial)	56	56	0.0%	57	56	1.3%
Telephone Lines in Service (Mt. Bell)(Residential)	59,512	61,630	3.6%	60,739	57,512	5.6%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,542	13,193	5.2%	12,952	12,120	6.9%
Salt Lake County						
Non-Ag. Employment (thous.)	356.6r	372.2	4.4%	371.0	355.4	4.4%
Unemployment Rate	3.6r	3.9	8.3%	4.0	4.2	-3.6%
Auth. Permit Construction (thous. of dol.)	25,234.7	23,929.6	–5.2%	47,941.0	35,845.4	33.7%
New Dwelling Units (no.)	163	185	13.5%	204	168	21.4%
Postal Receipts (thous. of dol.)	8,372.9	8,964.5	7.1%	7,997.2	8,226.4	-2.8%
Electric Customers (Residential)	246,393	249,534	1.3%	247,237	243,701	1.5%
Electric Customers (Commercial)	21,288	21,430	0.7%	21,214	20,961	1.2%
Natural Gas Customers (Residential)	229,277	233,338	1.8%	229,406	225,337	1.8%
Natural Gas Customers (Industrial)	246	248	0.8%	246	244	0.7%
Telephone Lines in Service (Mt. Bell)(Residential)	240,392	249,347	3.7%	245,126	236,480	3.7%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	115,887	121,893	5.2%	119,238	113,597	5.0%
Utah County						
Non-Ag. Employment (thous.)	90.2r	96.1	6.5%	94.2	88.1	6.9%
Unemployment Rate	3.3r	3.3	0.0%	3.9	4.2	-8.3%
Auth. Permit Construction (thous. of dol.)	10,004.9	8,030.8	–19.7%	17,550.8	12,798.5	37.1%
New Dwelling Units (no.)	57	52	-8.8%	112	76	47.6%
Postal Receipts (thous. of dol.)	1,801.9	1,747.9	-3.0%	1,680.5	1,501.1	12.0%
Electric Customers (Residential)	52,243	54,835	5.0%	54,307	53,200	2.1%
Electric Customers (Commercial)	7,623	6,149	–19.3%	6,908	6,446	7.2%
Natural Gas Customers (Residential)	64,452	66,010	2.4%	64,856	63,326	2.4%
Natural Gas Customers (Industrial)	72	74	2.8%	74	73	0.8%
Telephone Lines in Service (Mt. Bell)(Residential)	66,822	69,106	3.4%	67,479	66,382	1.7%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	20,164	21,980	9.0%	21,258	20,607	3.2%
Weber County						
Non-Ag. Employment (thous.)	65.0r	66.2	1.8%	66.8	64.3	4.0%
Unemployment Rate	4.3r	4.7	9.3%	5.7	5.5	3.5%
Auth. Permit Construction (thous. of dol.)	3,480.6	1,896.3	-45.5%	6,295.3	6,460.1	–2.6%
New Dwelling Units (no.)	26	19	–26.9%	40	47	–16.3%
Postal Receipts (thous. of dol.)	761.2	846.4	11.2%	733.6	702.0	4.5%
Electric Customers (Residential)	54,757	55,579	1.5%	55,022	54,333	1.3%
Electric Customers (Commercial)	5,058	5,253	3.9%	5,135	5,041	1.9%
Natural Gas Customers (Residential)	51,427	52,377	1.8%	51,530	50,702	1.6%
Natural Gas Customers (Industrial)	83	80	–3.6%	82	84	–3.3%
Telephone Lines in Service (Mt. Bell)(Residential)	46,559	47,929	2.9%	47,278	47,330	–0.1%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	13,043	13,443	3.1%	13,292	12,414	7.1%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA Not Available
r Revised

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture*.
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report*.
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

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NATIONAL DATA	Feb. 1990	Feb. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,375.4	5,557.7	3.4%	5,495.5	5,246.5	4.7%
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,561.6	4,733.3	3.8%	4,675.8	4,428.4	5.6%
Industrial Production Indexes (seasonally adjusted) (1987=100)	108.5	105.7	–2.6%	108.9	108.1	0.7%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	532.5	535.3	0.5%	533.4	513.5	3.9%
Net Exports of Goods and Services (bil.) (qtly.)	–30.0	13.5	–145.0%	–24.0	–43.0	–44.2%
Exports of Goods and Services (bil.) (qtly.)	661.3	694.5	5.0%	678.3	634.9	6.8%
Imports of Goods and Services (bil.) (ctly.)	691.3	681.0	–1.5%	702.3	677.8	3.6%
Index of Leading Indicators (1982=100)	144.1	140.2	–2.7%	143.0	144.7	–1.2%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	128.0	134.8	5.3%	131.8	125.0	5.4%
CPI-U (All Urban Consumers) Food & Beverages	130.9	136.0	3.9%	133.0	126.2	5.4%
CPI-U (All Urban Consumers) Housing	126.1	132.4	5.0%	129.6	123.9	4.6%
CPI-U (All Urban Consumers) Transportation	117.1	123.7	5.6%	121.8	115.1	5.8%
CPI-U (All Urban Consumers) Medical Care	157.5	172.5	9.5%	165.3	151.3	9.3%
CPI-U (All Urban Consumers) Energy	96.0	102.8	7.1%	103.4	95.6	8.2%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	117.4	121.2	3.2%	119.8	114.5	4.6%
GNP Price Deflator (1982=100) (qtly.)	129.5	134.8	4.1%	132.3	127.1	4.1%
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.7	125.1	0.3%	124.9	124.1	0.6%
Total Civilian Employment (mil.)	118.1	116.9	–1.0%	117.7	117.6	0.2%
Unemployment Rate	5.3	6.5	22.6%	5.7	5.3	8.4%
Construction						
Total Construction (mil. of dol.)	16,259.0	13,376.0	–17.7%	18,953.7	22,496.9	–15.7%
Residential	7,589.0	5,185.0	–31.7%	8,371.7	10,198.8	–17.9%
Nonresidential	5,407.0	5,091.0	–5.8%	6,737.8	8,171.0	–17.5%
Non-Building	3,262.0	3,100.0	–5.0%	3,844.3	4,127.1	–6.9%
New Dwelling Units (no.)	84,202	55,164	–34.5%	89,272	114,046	–21.6%
Interest Rates						
Federal Funds Rate	8.24	6.25	–24.2%	7.82	9.05	–13.5%
Short Term (3-month Treasury bill rate)	7.76	5.95	–23.3%	7.25	8.00	–9.4%
Long Term (30-year Treasury bond yields)	8.66	8.12	–6.2%	8.68	8.49	2.3%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	10.00	9.05	–9.5%	9.88	10.76	–8.2%
Mortgage Rates (new homes)	9.56	9.28	–2.9%	9.64	9.80	–1.6%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F.W. Dodge Report, McGraw-Hill: National Construction Data.

Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics: Consumer Price Indexes, Producer Price Index.

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Utah Economic and
Business Review

Volume 51
Number 6
June 1991

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PERSONAL INCOME IN UTAH COUNTIES, 1989

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The Bureau of Economic and Business Research of the University of Utah has been designated a member of the BEA User Group by the United States Department of Commerce, Bureau of Economic Analysis. As such, the Bureau of Economic and Business Research annually receives unpublished BEA estimates of county personal income for the purpose of providing public dissemination of the information. The data in Table 1 have been obtained from the most recently released BEA county personal income estimates for the State of Utah.

Personal Income and Its Components

Personal Income is defined by the BEA to comprise the money value of current income received from all sources by, or on behalf of, persons residing in a given geographical area, including income received in both monetary and non-monetary forms. Specifically, personal income consists of:

- Wage and salary disbursements, excluding social security taxes and other personal contributions for social insurance paid by employees.
- Other labor income, which consists of employer contributions for private life and medical insurance, private retirement programs and other private "fringe" benefits.
- Net income of owners of unincorporated enterprises, excluding self-employed contributions for social security and other social insurance.
- Property income, including dividends, interest and rent.
- Transfer payments, i.e., personal payments by government or business for which no services are currently rendered.

Income derived from participation in the work force is referred to as *labor and proprietors' income* or *earnings* and includes (1) wage and salary disbursements, (2) other labor income and (3) net income of owners of unincorporated enterprises. *Net labor and proprietors' income* or *net earnings* is arrived at by deducting social security taxes and other social insurance contributions paid by workers, including self-employment contributions paid by owners of unincorporated enterprises. Since wage and salary disbursements and other labor income are reported on a place-of-work basis, labor and proprietors' income must be adjusted for the effect of interarea commuting in order to arrive at the earnings component of personal income (which is defined on a place-of-residence basis). This adjustment is accomplished by estimating the difference between the net earnings of persons who reside in a given area but who work in other areas, and the net earnings of persons who work in the given area but reside in other areas. This difference is referred to as the *residence adjustment*.

BEA Income Imputations

It should be noted that the BEA personal income estimates include imputations or allowances for the value of certain types of income realizations, even though no monetary transaction is involved. These include imputations for:

- wages and salaries paid in kind, i.e., in the form of food, clothing or lodging;
- rental value of owner-occupied dwelling units;
- food and fuel produced and consumed on farms; and
- interest earned on money deposited with financial intermediaries for which no interest is actually paid or credited.

This last item includes, for example, an imputation for the interest earning potential of ordinary bank demand deposit accounts, even though banks do not ordinarily pay interest on such accounts. For the state as a whole, imputed interest amounts to roughly 35 percent of total interest, while imputed rent amounts to approximately 40 percent of total rent.

BEA Person Concept

It should be further noted that personal income as defined by the Bureau of Economic Analysis includes the income of certain legal entities not ordinarily regarded as "persons," including non-profit institutions serving individuals, private non-insured pension funds, health and welfare funds and private trust funds. In effect the current earnings of these organizations are credited directly to the ultimate beneficiaries for personal income accounting purposes. Since such organizations are considered to be persons, benefit payments by them to individuals are considered to be transfer payments among persons and not part of personal income. The undistributed earnings of life insurance carriers and private non-insured pension funds are also credited to persons for personal income accounting purposes.

County Income by Type and Industry

Table 1 presents the most recent Bureau of Economic Analysis county estimates of personal income broken down by type, and earnings broken down by industrial source. It should be stressed that personal income is presented on a place-of-residence basis, i.e., credited to the area of the recipient's residence; while labor and proprietors' income (earnings) is presented on a place-of-work basis, i.e., credited to the area in which the earning activity takes place.

Table 1 also reveals the industrial structure of income generation in Utah and its 29 counties. While many non-Utahns still regard Utah as having an agrarian economy, the fact is that in only six counties does farming account for more than 15 percent of total earnings. These six counties are Rich (with farming accounting for 46 percent of total earnings), Piute (39 percent), Beaver (20 percent), Morgan (18 percent), Sanpete (16 percent) and Wayne (16 percent). For the state as a whole, farming accounts for just 1 percent of total earnings.

Those counties whose economies may be characterized as distinctly oriented toward mining (including oil and gas extraction) include Emery (where the mining sector accounts for 37 percent of total earnings), Carbon (34 percent), San Juan (20 percent) and Uintah (19 percent). Those counties whose economies have a distinctly manufacturing orientation include Box Elder (where manufacturing accounts for 69 percent of total earnings), Cache (29 percent), Weber (20 percent) and Utah (19 percent).

There are two counties whose economies are dominated by the federal government: Tooele (where federal government accounts for 57 percent of total earnings) and Davis (38 percent). In Daggett the federal government accounts for 28 percent of total earnings; but in addition the state and local government sector accounts for 25 percent of total earnings—so that 53 percent of total earnings in Daggett comes from government employment.

There are only four counties for which property income and transfer payments account for 40 percent or more of total personal income. These are Piute (49 percent), Washington (43 percent), Beaver (41 percent) and Wayne (41 percent). The relatively high dependence of these counties on property income and transfer payments can be explained in part by the relatively high proportion of persons of retirement age in their populations. In 1990 Piute County led the state with 19 percent of its population being age 65 or over. Washington, Beaver and Wayne Counties were not far behind, with 15 to 16 percent of their populations being age 65 or over (U.S. Department of Commerce, Bureau of the Census, 1990 Census Report CPH-1, Table 44).

Growth Sectors and Growth Counties

For the state as a whole both the wholesale trade and services sectors showed substantial growth in labor and proprietors' income between 1988 and 1989. Wholesale trade led the way, with an increase of 11 percent, followed by services with an increase of 10 percent. Transportation and public utilities was not far behind, with an increase of 9 percent over the previous year. Federal civilian earnings also continued to grow, with an increase of 8 percent over the previous year.

Those counties exhibiting relative growth in the wholesale trade sector that was substantially higher than the state average were Wasatch (with an increase of 42 percent between 1988 and 1989), Tooele (37 percent), Utah (31 percent) and Iron (20 percent). Those counties showing high growth in the services sector were Daggett (with an increase of 22 percent), Summit (20 percent), Garfield (13 percent), Cache (13 percent) and Utah (13 percent).

Those counties experiencing rapid growth in the transportation and public utilities sector were Kane (with an increase of 68 percent over the previous year), Iron (66 percent), Carbon (41 percent), and Wayne (39 percent). Those counties exhibiting relatively rapid growth in earnings in the Federal civilian sector were Juab (with an increase of 14 percent) Weber (10 percent), Davis (10 percent) and Tooele (9 percent).

Nine counties stood out in relative growth in personal income between 1988 and 1989. Washington recorded the highest (with an increase of 12 percent) followed by Iron (12 percent), Utah (10 percent), Summit (10 percent), Cache (10 percent), Sevier (9 percent), Garfield (9 percent), Beaver (9 percent) and Davis (9 percent).

Per Capita Personal Income

Per capita personal income figures for Utah counties in 1989 are shown in Table 1 (on the second line). Summit County had the highest per capita personal income at $19,476, followed by Salt Lake ($14,315), Weber ($14,148), Daggett ($13,903), Carbon ($13,691), Box Elder ($13,651) and Grand ($13,307). A per capita personal income time series for the State of Utah from 1980 to 1990 is presented in Table 2. These data show that Utah's position was 80 percent of the national average in 1980, but has since slipped to only 75 percent of the national average. It should be noted that the estimates of per capita personal income in Table 2 are based on Bureau of the Census revised state population estimates, whereas the estimates of per capita personal income in Table 1 are based on estimates of county population that have not been revised to reflect the revision in the state population estimates. This accounts for the slight discrepancy between the estimated per capita personal income for the State of Utah as shown in Table 1 as compared to Table 2.

Table 2
Utah Per Capita Personal Income
1980-1990

Year	Amount (dollars)	Percent of U.S. Average	State Rank
1980	7,952	80	45
1981	8,660	79	45
1982	9,041	79	45
1983	9,400	78	45
1984	10,120	77	46
1985	10,653	77	47
1986	11,052	76	47
1987^r	11,534	74	47
1988^r	12,233	74	48
1989^r	13,094	74	47
1990^P	14,083	75	48

^{r} revised
^{P} preliminary

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	State of Utah			Beaver			Box Elder		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	22,353,064	100.0 [a]	8.1	55,311	100.0 [a]	9.0	534,164	100.0 [a]	4.8
Per capita personal income (dollars)	13,104	74.5 [b]	7.0	12,003	68.2 [b]	12.4	13,651	77.6 [b]	2.8
Derivation of total personal income:									
Total earnings by place of work	16,917,892	100.0 [c]	7.2	33,913	100.0 [c]	8.5	532,965	100.0 [c]	3.6
Less: Contributions for social insurance	1,025,028	6.1 [c]	11.3	2,018	6.0 [c]	22.4	32,064	6.0 [c]	8.3
Plus: Residence adjustment	89,068	0.5 [c]	11.3	719	2.1 [c]	24.4	-97,514	-18.3 [c]	4.0
Equals: Net earnings by place of residence	15,981,932	71.5 [a]	7.0	32,614	59.0 [a]	8.0	403,387	75.5 [a]	3.2
Plus: Dividends, interest, and rent	3,137,016	14.0 [a]	16.7	9,941	18.0 [a]	16.9	63,087	11.8 [a]	16.6
Plus: Transfer payments	3,234,116	14.5 [a]	5.8	12,756	23.1 [a]	6.1	67,690	12.7 [a]	4.7
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	13,853,198	81.9 [c]	7.1	22,201	65.5 [c]	15.3	429,202	80.5 [c]	4.4
Other labor income	1,270,429	7.5 [c]	9.9	1,906	5.6 [c]	19.1	58,917	11.1 [c]	6.9
Proprietors' income	1,794,265	10.6 [c]	5.8	9,806	28.9 [c]	-5.8	44,846	8.4 [c]	-6.5
Farm	164,655	1.0 [c]	-9.1	5,527	16.3 [c]	-12.5	16,578	3.1 [c]	-21.7
Nonfarm	1,629,610	9.6 [c]	7.6	4,279	12.6 [c]	4.4	28,268	5.3 [c]	5.5
Earnings by industry									
Farm	208,716	1.2 [c]	-7.6	6,663	19.6 [c]	-10.4	20,528	3.9 [c]	-18.5
Nonfarm	16,709,176	98.8 [c]	7.4	27,250	80.4 [c]	14.3	512,437	96.1 [c]	4.8
Private	13,298,589	78.6 [c]	7.9	20,465	60.3 [c]	19.2	478,664	89.8 [c]	5.1
Agricultural services and other	48,341	0.3 [c]	5.3	138	0.4 [c]	5.3	1,875	0.4 [c]	(U)
Mining	343,302	2.0 [c]	3.2	(L)	(L)	(L)	377	0.1 [c]	(U)
Construction	960,035	5.7 [c]	5.0	3,057	9.0 [c]	55.4	19,574	3.7 [c]	6.2
Manufacturing	2,853,127	16.9 [c]	6.2	1,273	3.8 [c]	7.8	369,828	69.4 [c]	4.6
Nondurable goods	733,901	4.3 [c]	4.2	860	2.5 [c]	9.8	3,771	0.7 [c]	-26.9
Durable goods	2,119,226	12.5 [c]	6.9	413	1.2 [c]	3.8	366,057	68.7 [c]	5.1
Transportation and public utilities	1,447,824	8.6 [c]	8.6	7,899	23.3 [c]	(U)	9,623	1.8 [c]	10.4
Wholesale trade	1,096,969	6.5 [c]	11.2	265	0.8 [c]	15.7	9,759	1.8 [c]	10.9
Retail trade	1,613,305	9.5 [c]	7.7	3,738	11.0 [c]	8.4	28,358	5.3 [c]	10.4
Finance, insurance, and real estate	901,495	5.3 [c]	3.2	677	2.0 [c]	-1.7	5,401	1.0 [c]	-1.1
Services	4,034,191	23.8 [c]	10.3	3,396	10.0 [c]	(U)	33,869	6.4 [c]	7.1
Government	3,410,587	20.2 [c]	5.6	6,785	20.0 [c]	1.7	33,773	6.3 [c]	0.3
Federal civilian	1,177,408	7.0 [c]	8.0	1,064	3.1 [c]	-0.7	3,103	0.6 [c]	1.8
Military	221,156	1.3 [c]	3.8	191	0.6 [c]	-1.0	1,702	0.3 [c]	1.7
State and local	2,012,023	11.9 [c]	4.5	5,530	16.3 [c]	2.3	28,968	5.4 [c]	0.1

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Cache			Carbon			Daggett		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	807,761	100.0 [a]	9.7	290,420	100.0 [a]	5.5	10,219	100.0 [a]	6.5
Per capita personal income (dollars)	11,971	68.0 [b]	8.5	13,691	77.8 [b]	7.2	13,903	79.0 [b]	7.9
Derivation of total personal income:									
Total earnings by place of work	545,974	100.0 [c]	9.7	194,280	100.0 [c]	4.7	6,160	100.0 [c]	1.9
Less: Contributions for social insurance	30,999	5.7 [c]	15.6	12,275	6.3 [c]	10.2	305	5.0 [c]	8.2
Plus: Residence adjustment	57,923	10.6 [c]	5.4	12,929	6.7 [c]	-1.1	1,477	24.0 [c]	3.4
Equals: Net earnings by place of residence	572,898	70.9 [a]	9.0	194,934	67.1 [a]	3.9	7,332	71.7 [a]	1.9
Plus: Dividends, interest, and rent	117,955	14.6 [a]	16.7	39,264	13.5 [a]	16.8	1,074	10.5 [a]	18.5
Plus: Transfer payments	116,908	14.5 [a]	6.9	56,222	19.4 [a]	3.9	1,813	17.7 [a]	21.6
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	426,006	78.0 [c]	9.5	155,995	80.3 [c]	4.5	4,599	74.7 [c]	3.7
Other labor income	40,850	7.5 [c]	12.5	18,743	9.6 [c]	5.0	468	7.6 [c]	12.2
Proprietors' income	79,118	14.5 [c]	9.4	19,542	10.1 [c]	5.6	1,093	17.7 [c]	-8.5
Farm	14,853	2.7 [c]	10.1	1,842	0.9 [c]	-19.9	341	5.5 [c]	-29.0
Nonfarm	64,265	11.8 [c]	9.2	17,700	9.1 [c]	9.2	752	12.2 [c]	5.3
Earnings by industry									
Farm	19,098	3.5 [c]	7.7	2,073	1.1 [c]	-18.6	385	6.3 [c]	-28.2
Nonfarm	526,876	96.5 [c]	9.8	192,207	98.9 [c]	5.0	5,775	93.8 [c]	4.8
Private	386,211	70.7 [c]	12.0	158,674	81.7 [c]	5.5	2,574	41.8 [c]	4.8
Agricultural services and other	1,613	0.3 [c]	-56.1	161	0.1 [c]	10.3	(D)	(D)	(D)
Mining	442	0.1 [c]	8.6	65,260	33.6 [c]	-1.1	(D)	(D)	(D)
Construction	35,815	6.6 [c]	-3.1	6,388	3.3 [c]	-0.6	190	3.1 [c]	0.5
Manufacturing	159,258	29.2 [c]	20.2	4,900	2.5 [c]	-0.1	0	0.0 [c]	(U)
Nondurable goods	99,745	18.3 [c]	15.5	3,298	1.7 [c]	-6.9	0	0.0 [c]	(U)
Durable goods	59,513	10.9 [c]	29.0	1,602	0.8 [c]	17.3	0	0.0 [c]	(U)
Transportation and public utilities	16,641	3.0 [c]	4.9	21,480	11.1 [c]	41.1	973	15.8 [c]	-4.2
Wholesale trade	10,213	1.9 [c]	4.7	7,690	4.0 [c]	6.6	0	0.0 [c]	(U)
Retail trade	43,274	7.9 [c]	9.5	16,967	8.7 [c]	6.1	309	5.0 [c]	-9.9
Finance, insurance, and real estate	13,616	2.5 [c]	2.3	4,250	2.2 [c]	-6.7	(L)	(L)	(L)
Services	105,339	19.3 [c]	13.4	31,578	16.3 [c]	5.4	1,092	17.7 [c]	21.9
Government	140,665	25.8 [c]	4.2	33,533	17.3 [c]	2.7	3,201	52.0 [c]	4.7
Federal civilian	9,317	1.7 [c]	4.9	5,644	2.9 [c]	-1.3	1,703	27.6 [c]	3.3
Military	3,973	0.7 [c]	1.1	879	0.5 [c]	0.3	(L)	(L)	(L)
State and local	127,375	23.3 [c]	4.2	27,010	13.9 [c]	3.6	1,468	23.8 [c]	6.6

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Davis			Duchesne			Emery		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	2,338,337	100.0 [a]	8.6	143,822	100.0 [a]	5.2	109,508	100.0 [a]	7.3
Per capita personal income (dollars)	12,430	70.7 [b]	6.7	11,079	63.0 [b]	9.6	9,884	56.2 [b]	9.6
Derivation of total personal income:									
Total earnings by place of work	1,585,117	100.0 [c]	9.7	97,271	100.0 [c]	5.3	126,986	100.0 [c]	12.6
Less: Contributions for social insurance	88,169	5.6 [c]	11.9	5,253	5.4 [c]	11.2	7,416	5.8 [c]	16.9
Plus: Residence adjustment	277,308	17.5 [c]	0.4	7,062	7.3 [c]	-8.6	-39,181	-30.9 [c]	24.8
Equals: Net earnings by place of residence	1,774,256	75.9 [a]	8.1	99,080	68.9 [a]	3.8	80,389	73.4 [a]	7.1
Plus: Dividends, interest, and rent	253,326	10.8 [a]	16.1	20,312	14.1 [a]	17.0	10,561	9.6 [a]	17.0
Plus: Transfer payments	310,755	13.3 [a]	6.3	24,430	17.0 [a]	2.2	18,558	16.9 [a]	3.3
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	1,321,475	83.4 [c]	9.5	62,009	63.7 [c]	4.1	100,395	79.1 [c]	13.1
Other labor income	110,137	6.9 [c]	17.5	6,031	6.2 [c]	8.5	14,437	11.4 [c]	14.1
Proprietors' income	153,505	9.7 [c]	7.0	29,231	30.1 [c]	7.2	12,154	9.6 [c]	6.7
Farm	9,591	0.6 [c]	-9.6	9,646	9.9 [c]	8.5	4,328	3.4 [c]	12.3
Nonfarm	143,914	9.1 [c]	8.3	19,585	20.1 [c]	6.5	7,826	6.2 [c]	3.8
Earnings by industry									
Farm	11,826	0.7 [c]	-8.1	10,710	11.0 [c]	7.3	4,693	3.7 [c]	10.5
Nonfarm	1,573,291	99.3 [c]	9.9	86,561	89.0 [c]	5.0	122,293	96.3 [c]	12.6
Private	837,255	52.8 [c]	11.5	66,005	67.9 [c]	6.4	108,337	85.3 [c]	13.9
Agricultural services and other	4,996	0.3 [c]	17.4	329	0.3 [c]	6.1	153	0.1 [c]	10.1
Mining	3,150	0.2 [c]	17.0	12,196	12.5 [c]	11.3	47,103	37.1 [c]	14.1
Construction	81,932	5.2 [c]	-0.3	6,282	6.5 [c]	5.4	11,722	9.2 [c]	101.3
Manufacturing	198,185	12.5 [c]	19.3	3,699	3.8 [c]	32.8	195	0.2 [c]	(U)
Nondurable goods	60,988	3.8 [c]	10.0	2,621	2.7 [c]	20.5	(D)	(D)	(D)
Durable goods	137,197	8.7 [c]	24.0	1,078	1.1 [c]	77.0	(D)	(D)	(D)
Transportation and public utilities	58,169	3.7 [c]	11.3	13,808	14.2 [c]	-0.2	35,717	28.1 [c]	(U)
Wholesale trade	62,238	3.9 [c]	10.3	4,231	4.3 [c]	-8.2	694	0.5 [c]	13.8
Retail trade	133,879	8.4 [c]	12.3	8,002	8.2 [c]	-0.1	3,637	2.9 [c]	17.8
Finance, insurance, and real estate	34,893	2.2 [c]	9.3	2,053	2.1 [c]	23.7	801	0.6 [c]	10.2
Services	259,813	16.4 [c]	10.2	15,405	15.8 [c]	10.6	8,315	6.5 [c]	(U)
Government	736,036	46.4 [c]	8.1	20,556	21.1 [c]	0.9	13,956	11.0 [c]	3.5
Federal civilian	479,521	30.3 [c]	9.6	3,169	3.3 [c]	-12.1	1,344	1.1 [c]	-0.4
Military	122,298	7.7 [c]	3.0	538	0.6 [c]	-2.2	459	0.4 [c]	-0.4
State and local	134,217	8.5 [c]	7.5	16,849	17.3 [c]	3.9	12,153	9.6 [c]	4.1

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Garfield			Grand			Iron		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	49,027	100.0 [a]	9.1	83,859	100.0 [a]	5.4	202,715	100.0 [a]	12.1
Per capita personal income (dollars)	11,975	68.1 [b]	8.6	13,307	75.6 [b]	9.5	10,661	60.6 [b]	13.2
Derivation of total personal income:									
Total earnings by place of work	32,128	100.0 [c]	9.6	47,161	100.0 [c]	2.5	145,230	100.0 [c]	13.2
Less: Contributions for social insurance	1,792	5.6 [c]	15.3	2,974	6.3 [c]	9.7	8,268	5.7 [c]	20.6
Plus: Residence adjustment	1,389	4.3 [c]	-1.6	9,674	20.5 [c]	5.5	-1,846	-1.3 [c]	96.0
Equals: Net earnings by place of residence	31,725	64.7 [a]	8.7	53,861	64.2 [a]	2.6	135,116	66.7 [a]	12.1
Plus: Dividends, interest, and rent	8,198	16.7 [a]	17.4	13,962	16.6 [a]	17.3	29,064	14.3 [a]	16.5
Plus: Transfer payments	9,104	18.6 [a]	4.0	16,036	19.1 [a]	5.7	38,535	19.0 [a]	8.9
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	22,759	70.8 [c]	9.4	32,622	69.2 [c]	2.7	109,824	75.6 [c]	15.1
Other labor income	2,125	6.6 [c]	17.0	2,839	6.0 [c]	6.9	10,231	7.0 [c]	25.8
Proprietors' income	7,244	22.5 [c]	8.1	11,700	24.8 [c]	0.8	25,175	17.3 [c]	1.7
Farm	3,724	11.6 [c]	11.2	217	0.5 [c]	-77.0	5,930	4.1 [c]	-15.2
Nonfarm	3,520	11.0 [c]	4.9	11,483	24.3 [c]	7.6	19,245	13.3 [c]	8.4
Earnings by industry									
Farm	4,048	12.6 [c]	9.6	400	0.8 [c]	-65.3	7,428	5.1 [c]	-12.8
Nonfarm	28,080	87.4 [c]	9.5	46,761	99.2 [c]	4.2	137,802	94.9 [c]	15.1
Private	19,887	61.9 [c]	12.0	35,519	75.3 [c]	3.0	97,759	67.3 [c]	18.1
Agricultural services and other	(L)	(L)	(L)	90	0.2 [c]	12.5	1,432	1.0 [c]	-5.4
Mining	(D)	(D)	(D)	5,119	10.9 [c]	-5.0	4,119	2.8 [c]	-14.0
Construction	1,192	3.7 [c]	37.0	2,955	6.3 [c]	9.1	6,688	4.6 [c]	-8.8
Manufacturing	5,217	16.2 [c]	3.2	739	1.6 [c]	-19.7	9,808	6.8 [c]	87.0
Nondurable goods	(D)	(D)	(D)	271	0.6 [c]	-17.6	5,677	3.9 [c]	62.0
Durable goods	(D)	(D)	(D)	468	1.0 [c]	-20.8	4,131	2.8 [c]	137.4
Transportation and public utilities	2,457	7.6 [c]	23.5	4,923	10.4 [c]	-7.2	17,115	11.8 [c]	66.0
Wholesale trade	(D)	(D)	(D)	1,345	2.9 [c]	-4.7	4,560	3.1 [c]	20.2
Retail trade	2,085	6.5 [c]	7.9	6,820	14.5 [c]	15.5	20,257	13.9 [c]	8.2
Finance, insurance, and real estate	679	2.1 [c]	23.7	1,114	2.4 [c]	1.0	4,876	3.4 [c]	4.9
Services	7,640	23.8 [c]	13.4	12,414	26.3 [c]	6.5	28,904	19.9 [c]	9.4
Government	8,193	25.5 [c]	4.1	11,242	23.8 [c]	8.2	40,043	27.6 [c]	8.3
Federal civilian	3,546	11.0 [c]	0.8	4,762	10.1 [c]	7.1	9,337	6.4 [c]	3.3
Military	169	0.5 [c]	2.4	261	0.6 [c]	-1.9	801	0.6 [c]	2.6
State and local	4,478	13.9 [c]	7.0	6,219	13.2 [c]	9.5	29,905	20.6 [c]	10.2

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Juab			Kane			Millard		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	57,483	100.0 [a]	7.2	56,391	100.0 [a]	6.7	130,477	100.0 [a]	5.4
Per capita personal income (dollars)	10,291	58.5 [b]	9.5	11,189	63.6 [b]	4.4	11,127	63.3 [b]	10.9
Derivation of total personal income:									
Total earnings by place of work	33,288	100.0 [c]	8.5	27,727	100.0 [c]	4.0	99,440	100.0 [c]	3.4
Less: Contributions for social insurance	2,051	6.2 [c]	18.3	1,727	6.2 [c]	12.9	5,575	5.6 [c]	9.3
Plus: Residence adjustment	4,215	12.7 [c]	1.2	9,310	33.6 [c]	6.5	-5,288	-5.3 [c]	-1.2
Equals: Net earnings by place of residence	35,452	61.7 [a]	7.0	35,310	62.6 [a]	4.2	88,577	67.9 [a]	3.3
Plus: Dividends, interest, and rent	8,287	14.4 [a]	16.5	10,785	19.1 [a]	17.2	22,020	16.9 [a]	17.2
Plus: Transfer payments	13,744	23.9 [a]	2.7	10,296	18.3 [a]	5.3	19,880	15.2 [a]	2.7
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	23,027	69.2 [c]	10.5	20,189	72.8 [c]	5.2	70,884	71.3 [c]	4.1
Other labor income	2,133	6.4 [c]	13.7	1,605	5.8 [c]	17.1	8,299	8.3 [c]	6.4
Proprietors' income	8,128	24.4 [c]	2.1	5,933	21.4 [c]	-3.0	20,257	20.4 [c]	-0.1
Farm	2,653	8.0 [c]	-11.7	1,031	3.7 [c]	-29.5	8,439	8.5 [c]	-4.8
Nonfarm	5,475	16.4 [c]	10.4	4,902	17.7 [c]	5.4	11,818	11.9 [c]	3.6
Earnings by industry									
Farm	3,251	9.8 [c]	-9.9	1,199	4.3 [c]	-27.9	11,142	11.2 [c]	-3.8
Nonfarm	30,037	90.2 [c]	10.9	26,528	95.7 [c]	6.1	88,298	88.8 [c]	4.4
Private	23,592	70.9 [c]	12.3	18,525	66.8 [c]	6.4	73,374	73.8 [c]	3.4
Agricultural services and other	(L)	(L)	(L)	(D)	(D)	(D)	754	0.8 [c]	-3.8
Mining	(D)	(D)	(D)	(D)	(D)	(D)	4,368	4.4 [c]	12.1
Construction	(D)	(D)	(D)	1,858	6.7 [c]	12.1	8,946	9.0 [c]	-1.7
Manufacturing	(D)	(D)	(D)	1,031	3.7 [c]	15.3	4,772	4.8 [c]	-9.8
Nondurable goods	(D)	(D)	(D)	170	0.6 [c]	-32.0	1,220	1.2 [c]	5.0
Durable goods	(D)	(D)	(D)	861	3.1 [c]	33.7	3,552	3.6 [c]	-14.0
Transportation and public utilities	1,204	3.6 [c]	22.7	2,137	7.7 [c]	67.6	34,997	35.2 [c]	7.5
Wholesale trade	2,355	7.1 [c]	8.1	1,309	4.7 [c]	2.0	1,058	1.1 [c]	0.1
Retail trade	3,672	11.0 [c]	11.4	4,557	16.4 [c]	-4.5	6,977	7.0 [c]	2.9
Finance, insurance, and real estate	751	2.3 [c]	-3.3	697	2.5 [c]	-18.2	1,638	1.6 [c]	-1.3
Services	5,735	17.2 [c]	7.2	6,727	24.3 [c]	3.3	9,864	9.9 [c]	0.1
Government	6,445	19.4 [c]	6.1	8,003	28.9 [c]	5.5	14,924	15.0 [c]	9.7
Federal civilian	658	2.0 [c]	14.2	1,707	6.2 [c]	-1.7	2,429	2.4 [c]	0.0
Military	232	0.7 [c]	0.0	209	0.8 [c]	4.0	486	0.5 [c]	-3.0
State and local	5,555	16.7 [c]	5.5	6,087	22.0 [c]	7.7	12,009	12.1 [c]	12.5

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Morgan			Piute			Rich		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	73,227	100.0 [a]	4.0	13,053	100.0 [a]	3.1	24,113	100.0 [a]	3.4
Per capita personal income (dollars)	13,220	75.1 [b]	1.9	9,257	52.6 [b]	3.8	12,526	71.2 [b]	8.5
Derivation of total personal income:									
Total earnings by place of work	27,461	100.0 [c]	-1.1	5,266	100.0 [c]	-1.6	9,736	100.0 [c]	-1.3
Less: Contributions for social insurance	1,474	5.4 [c]	6.4	274	5.2 [c]	17.1	345	3.5 [c]	12.7
Plus: Residence adjustment	26,016	94.7 [c]	4.0	1,541	29.3 [c]	2.2	5,733	58.9 [c]	1.9
Equals: Net earnings by place of residence	52,003	71.0 [a]	1.2	6,533	50.0 [a]	-1.4	15,124	62.7 [a]	-0.4
Plus: Dividends, interest, and rent	10,557	14.4 [a]	17.1	2,676	20.5 [a]	17.7	5,719	23.7 [a]	16.8
Plus: Transfer payments	10,667	14.6 [a]	6.4	3,844	29.4 [a]	2.1	3,270	13.6 [a]	1.2
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	18,057	65.8 [c]	-0.5	2,577	48.9 [c]	-1.0	5,355	55.0 [c]	2.9
Other labor income	1,512	5.5 [c]	0.2	204	3.9 [c]	7.9	433	4.4 [c]	11.0
Proprietors' income	7,892	28.7 [c]	-2.5	2,485	47.2 [c]	-2.8	3,948	40.6 [c]	-7.5
Farm	3,453	12.6 [c]	-10.6	1,820	34.6 [c]	-5.5	3,410	35.0 [c]	-7.4
Nonfarm	4,439	16.2 [c]	4.8	665	12.6 [c]	5.2	538	5.5 [c]	-7.9
Earnings by industry									
Farm	4,960	18.1 [c]	-7.2	2,061	39.1 [c]	-4.6	4,458	45.8 [c]	-6.0
Nonfarm	22,501	81.9 [c]	0.4	3,205	60.9 [c]	0.5	5,278	54.2 [c]	3.1
Private	17,794	64.8 [c]	-0.8	1,488	28.3 [c]	2.2	2,629	27.0 [c]	4.2
Agricultural services and other	67	0.2 [c]	9.8	52	1.0 [c]	(U)	119	1.2 [c]	9.2
Mining	128	0.5 [c]	8.5	(L)	(L)	(L)	(D)	(D)	(D)
Construction	2,926	10.7 [c]	-9.6	160	3.0 [c]	0.6	237	2.4 [c]	-21.5
Manufacturing	4,564	16.6 [c]	-8.2	196	3.7 [c]	-17.6	(D)	(D)	(D)
Nondurable goods	(D)	(D)	(D)	(D)	(D)	(D)	0	0.0 [c]	(U)
Durable goods	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Transportation and public utilities	280	1.0 [c]	-30.0	262	5.0 [c]	2.3	407	4.2 [c]	14.0
Wholesale trade	4,367	15.9 [c]	1.5	(L)	(L)	(L)	(D)	(D)	(D)
Retail trade	1,748	6.4 [c]	28.4	131	2.5 [c]	36.5	549	5.6 [c]	0.5
Finance, insurance, and real estate	829	3.0 [c]	-0.8	173	3.3 [c]	-1.7	355	3.6 [c]	(U)
Services	2,885	10.5 [c]	9.0	466	8.8 [c]	5.7	703	7.2 [c]	-3.8
Government	4,707	17.1 [c]	5.0	1,717	32.6 [c]	-0.9	2,649	27.2 [c]	2.1
Federal civilian	259	0.9 [c]	4.4	152	2.9 [c]	4.1	304	3.1 [c]	-4.1
Military	230	0.8 [c]	4.1	58	1.1 [c]	0.0	80	0.8 [c]	-2.4
State and local	4,218	15.4 [c]	5.1	1,507	28.6 [c]	-1.4	2,265	23.3 [c]	3.1

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Salt Lake			San Juan			Sanpete		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personai income	10,440,773	100.0 [a]	7.9	95,112	100.0 [a]	6.3	159,406	100.0 [a]	4.4
Per capita personal income (dollars)	14,315	81.4 [b]	6.5	8,179	46.5 [b]	6.3	9,745	55.4 [b]	4.9
Derivation of total personal income:									
Total earnings by place of work	8,826,923	100.0 [c]	6.7	71,308	100.0 [c]	4.0	83,092	100.0 [c]	1.9
Less: Contributions for social insurance	545,645	6.2 [c]	10.5	3,888	5.5 [c]	9.2	4,626	5.6 [c]	14.4
Plus: Residence adjustment	-729,965	-8.3 [c]	5.2	-5,832	-8.2 [c]	-0.4	22,401	27.0 [c]	6.1
Equals: Net earnings by place of residence	7,551,313	72.3 [a]	6.5	61,588	64.8 [a]	4.1	100,867	63.3 [a]	2.3
Plus: Dividends, interest, and rent	1,569,530	15.0 [a]	16.8	11,374	12.0 [a]	17.0	23,518	14.8 [a]	16.6
Plus: Transfer payments	1,319,930	12.6 [a]	6.2	22,150	23.3 [a]	7.5	35,021	22.0 [a]	3.5
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	7,419,084	84.1 [c]	6.5	54,970	77.1 [c]	4.5	54,967	66.2 [c]	4.5
Other labor income	663,532	7.5 [c]	8.0	5,204	7.3 [c]	8.3	5,460	6.6 [c]	10.8
Proprietors' income	744,307	8.4 [c]	7.4	11,134	15.6 [c]	-0.2	22,665	27.3 [c]	-5.7
Farm	6,991	0.1 [c]	-20.3	3,735	5.2 [c]	-7.2	10,584	12.7 [c]	-16.9
Nonfarm	737,316	8.4 [c]	7.8	7,399	10.4 [c]	3.7	12,081	14.5 [c]	7.0
Earnings by industry									
Farm	10,651	0.1 [c]	-14.9	4,424	6.2 [c]	-6.5	13,528	16.3 [c]	-14.2
Nonfarm	8,816,272	99.9 [c]	6.7	66,884	93.8 [c]	4.8	69,564	83.7 [c]	5.8
Private	7,507,023	85.0 [c]	7.1	45,742	64.1 [c]	4.4	47,803	57.5 [c]	7.7
Agricultural services and other	22,186	0.3 [c]	15.3	109	0.2 [c]	6.9	623	0.7 [c]	9.9
Mining	114,492	1.3 [c]	3.1	14,238	20.0 [c]	-2.4	109	0.1 [c]	-35.1
Construction	494,720	5.6 [c]	5.2	6,245	8.8 [c]	29.2	5,653	6.8 [c]	0.4
Manufacturing	1,355,178	15.4 [c]	3.3	2,303	3.2 [c]	2.0	12,900	15.5 [c]	13.4
Nondurable goods	314,570	3.6 [c]	-0.1	810	1.1 [c]	-16.2	11,198	13.5 [c]	14.9
Durable goods	1,040,608	11.8 [c]	4.4	1,493	2.1 [c]	15.7	1,702	2.0 [c]	4.5
Transportation and public utilities	984,449	11.2 [c]	8.6	3,828	5.4 [c]	8.5	5,616	6.8 [c]	12.1
Wholesale trade	814,704	9.2 [c]	9.9	1,301	1.8 [c]	(U)	1,196	1.4 [c]	5.0
Retail trade	885,924	10.0 [c]	7.0	4,885	6.9 [c]	-4.7	7,173	8.6 [c]	-1.2
Finance, insurance, and real estate	669,884	7.6 [c]	3.0	657	0.9 [c]	(U)	2,482	3.0 [c]	11.8
Services	2,165,486	24.5 [c]	9.9	12,176	17.1 [c]	5.8	12,051	14.5 [c]	9.3
Government	1,309,249	14.8 [c]	4.4	21,142	29.6 [c]	5.6	21,761	26.2 [c]	1.8
Federal civilian	244,612	2.8 [c]	6.0	4,416	6.2 [c]	1.3	2,027	2.4 [c]	-8.2
Military	46,402	0.5 [c]	2.7	482	0.7 [c]	2.1	771	0.9 [c]	2.0
State and local	1,018,235	11.5 [c]	4.1	16,244	22.8 [c]	7.0	18,963	22.8 [c]	3.0

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Sevier			Summit			Tooele		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	179,055	100.0[a]	9.3	279,307	100.0[a]	9.8	373,453	100.0[a]	6.2
Per capita personal income (dollars)	11,881	67.5[b]	10.5	19,476	110.7[b]	6.0	13,121	74.6[b]	6.9
Derivation of total personal income:									
Total earnings by place of work	123,168	100.0[c]	10.4	163,469	100.0[c]	9.8	302,229	100.0[c]	5.7
Less: Contributions for social insurance	7,366	6.0[c]	15.1	9,669	5.9[c]	15.5	15,586	5.2[c]	6.1
Plus: Residence adjustment	573	0.5[c]	-52.3	66,463	40.7[c]	7.7	-6,692	-2.2[c]	4.4
Equals: Net earnings by place of residence	116,375	65.0[a]	9.4	220,263	78.9[a]	8.9	279,951	75.0[a]	5.7
Plus: Dividends, interest, and rent	27,773	15.5[a]	16.6	39,972	14.3[a]	17.3	30,194	8.1[a]	16.0
Plus: Transfer payments	34,907	19.5[a]	4.0	19,072	6.8[a]	5.6	63,308	17.0[a]	4.3
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	89,899	73.0[c]	8.9	121,039	74.0[c]	10.9	260,018	86.0[c]	5.2
Other labor income	9,656	7.8[c]	16.7	8,654	5.3[c]	13.0	24,477	8.1[c]	18.4
Proprietors' income	23,613	19.2[c]	13.5	33,776	20.7[c]	5.1	17,734	5.9[c]	-2.4
Farm	5,936	4.8[c]	36.4	6,657	4.1[c]	-4.3	3,694	1.2[c]	-26.3
Nonfarm	17,677	14.4[c]	7.5	27,119	16.6[c]	7.8	14,040	4.6[c]	6.7
Earnings by industry									
Farm	7,643	6.2[c]	26.2	7,835	4.8[c]	-4.3	4,599	1.5[c]	-22.7
Nonfarm	115,525	93.8[c]	9.4	155,634	95.2[c]	10.6	297,630	98.5[c]	6.3
Private	91,607	74.4[c]	10.8	136,550	83.5[c]	11.6	105,413	34.9[c]	4.9
Agricultural services and other	194	0.2[c]	14.1	979	0.6[c]	-0.5	495	0.2[c]	15.7
Mining	13,911	11.3[c]	17.0	3,221	2.0[c]	-26.4	(D)	(D)	(D)
Construction	12,085	9.8[c]	52.8	12,741	7.8[c]	-4.0	(D)	(D)	(D)
Manufacturing	9,429	7.7[c]	6.3	5,850	3.6[c]	56.1	30,073	10.0[c]	0.2
Nondurable goods	3,467	2.8[c]	83.4	959	0.6[c]	38.8	28,459	9.4[c]	0.5
Durable goods	5,962	4.8[c]	-14.6	4,891	3.0[c]	60.0	1,614	0.5[c]	-4.8
Transportation and public utilities	17,071	13.9[c]	-0.7	8,833	5.4[c]	13.2	9,585	3.2[c]	10.2
Wholesale trade	4,122	3.3[c]	9.9	2,644	1.6[c]	-21.8	899	0.3[c]	36.6
Retail trade	12,952	10.5[c]	4.3	19,418	11.9[c]	5.2	13,001	4.3[c]	1.8
Finance, insurance, and real estate	3,841	3.1[c]	5.8	21,027	12.9[c]	12.1	2,872	1.0[c]	0.0
Services	18,002	14.6[c]	6.8	61,837	37.8[c]	19.9	28,566	9.5[c]	7.3
Government	23,918	19.4[c]	4.5	19,084	11.7[c]	3.9	192,217	63.6[c]	7.1
Federal civilian	5,804	4.7[c]	3.6	1,478	0.9[c]	-10.3	161,892	53.6[c]	9.0
Military	625	0.5[c]	1.0	594	0.4[c]	5.5	9,729	3.2[c]	-0.8
State and local	17,489	14.2[c]	5.0	17,012	10.4[c]	5.3	20,596	6.8[c]	-2.6

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Uintah			Utah			Wasatch		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	229,224	100.0 [a]	3.4	2,720,691	100.0 [a]	9.9	112,627	100.0 [a]	3.8
Per capita personal income (dollars)	10,670	60.7 [b]	7.5	11,171	63.5 [b]	9.5	11,358	64.6 [b]	3.2
Derivation of total personal income:									
Total earnings by place of work	172,492	100.0 [c]	0.6	1,890,257	100.0 [c]	10.1	50,174	100.0 [c]	-1.0
Less: Contributions for social insurance	9,987	5.8 [c]	5.5	117,872	6.2 [c]	15.3	3,029	6.0 [c]	4.7
Plus: Residence adjustment	-355	-0.2 [c]	-72.9	198,668	10.5 [c]	10.2	30,013	59.8 [c]	5.4
Equals: Net earnings by place of residence	162,150	70.7 [a]	0.9	1,971,053	72.4 [a]	9.8	77,158	68.5 [a]	1.2
Plus: Dividends, interest, and rent	31,019	13.5 [a]	16.7	334,504	12.3 [a]	16.2	17,339	15.4 [a]	16.7
Plus: Transfer payments	36,055	15.7 [a]	4.9	415,134	15.3 [a]	5.7	18,130	16.1 [a]	4.4
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	122,440	71.0 [c]	-0.8	1,507,557	79.8 [c]	10.5	36,756	73.3 [c]	-2.8
Other labor income	10,765	6.2 [c]	3.1	132,416	7.0 [c]	11.8	3,001	6.0 [c]	-1.2
Proprietors' income	39,287	22.8 [c]	4.3	250,284	13.2 [c]	6.4	10,417	20.8 [c]	5.8
Farm	9,222	5.3 [c]	-3.6	13,485	0.7 [c]	-11.3	2,052	4.1 [c]	0.8
Nonfarm	30,065	17.4 [c]	6.9	236,799	12.5 [c]	7.7	8,365	16.7 [c]	7.1
Earnings by industry									
Farm	10,091	5.9 [c]	-3.4	20,387	1.1 [c]	-7.9	3,098	6.2 [c]	0.6
Nonfarm	162,401	94.1 [c]	0.8	1,869,870	98.9 [c]	10.3	47,076	93.8 [c]	-1.1
Private	131,228	76.1 [c]	1.3	1,602,801	84.8 [c]	11.3	35,441	70.6 [c]	-3.6
Agricultural services and other	563	0.3 [c]	3.3	5,714	0.3 [c]	10.7	193	0.4 [c]	-4.0
Mining	31,839	18.5 [c]	-4.7	1,927	0.1 [c]	10.1	(L)	(L)	(L)
Construction	7,685	4.5 [c]	-3.0	103,222	5.5 [c]	6.3	10,668	21.3 [c]	-24.8
Manufacturing	4,625	2.7 [c]	-2.9	359,016	19.0 [c]	8.4	1,339	2.7 [c]	35.0
Nondurable goods	996	0.6 [c]	-1.6	90,943	4.8 [c]	15.3	404	0.8 [c]	18.1
Durable goods	3,629	2.1 [c]	-3.2	268,073	14.2 [c]	6.2	935	1.9 [c]	43.8
Transportation and public utilities	22,982	13.3 [c]	4.7	77,392	4.1 [c]	5.3	2,807	5.6 [c]	-5.3
Wholesale trade	10,068	5.8 [c]	10.2	86,976	4.6 [c]	31.0	1,989	4.0 [c]	41.7
Retail trade	16,172	9.4 [c]	3.7	171,941	9.1 [c]	9.6	4,819	9.6 [c]	-5.3
Finance, insurance, and real estate	2,608	1.5 [c]	2.8	57,325	3.0 [c]	5.6	1,316	2.6 [c]	40.6
Services	34,686	20.1 [c]	2.8	739,288	39.1 [c]	13.1	12,280	24.5 [c]	12.3
Government	31,173	18.1 [c]	-0.9	267,069	14.1 [c]	4.5	11,635	23.2 [c]	7.2
Federal civilian	10,924	6.3 [c]	2.6	22,375	1.2 [c]	1.1	1,552	3.1 [c]	-6.4
Military	891	0.5 [c]	-1.9	11,092	0.6 [c]	2.9	410	0.8 [c]	2.2
State and local	19,358	11.2 [c]	-2.8	233,602	12.4 [c]	4.9	9,673	19.3 [c]	10.0

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Table 1 (continued)
Personal Income and Earnings in Utah Counties by Type and Industrial Source, 1989

	Washington			Wayne			Weber		
	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89	Income/ Earnings ($1,000)	Components as Percent of Totals	Percent Change 1988–89
Income by Place of Residence									
Total personal income	483,984	100.0 [a]	12.3	20,823	100.0 [a]	-0.4	2,278,722	100.0 [a]	7.1
Per capita personal income (dollars)	10,383	59.0 [b]	4.7	10,207	58.0 [b]	0.7	14,148	80.4 [b]	6.5
Derivation of total personal income:									
Total earnings by place of work	279,193	100.0 [c]	12.6	11,715	100.0 [c]	-5.4	1,393,769	100.0 [c]	5.2
Less: Contributions for social insurance	18,502	6.6 [c]	19.8	645	5.5 [c]	6.3	85,234	6.1 [c]	8.8
Plus: Residence adjustment	13,609	4.9 [c]	7.7	1,169	10.0 [c]	1.8	227,549	16.3 [c]	12.4
Equals: Net earnings by place of residence	274,300	56.7 [a]	11.9	12,239	58.8 [a]	-5.3	1,536,084	67.4 [a]	6.0
Plus: Dividends, interest, and rent	108,428	22.4 [a]	17.7	3,895	18.7 [a]	17.5	312,682	13.7 [a]	16.6
Plus: Transfer payments	101,256	20.9 [a]	8.1	4,689	22.5 [a]	0.5	429,956	18.9 [a]	4.8
Earnings by Place of Work									
Components of earnings									
Wage and salary disbursements	200,899	72.0 [c]	14.6	7,066	60.3 [c]	-4.8	1,151,327	82.6 [c]	4.8
Other labor income	16,704	6.0 [c]	17.8	798	6.8 [c]	12.2	108,892	7.8 [c]	9.2
Proprietors' income	61,590	22.1 [c]	5.4	3,851	32.9 [c]	-9.3	133,550	9.6 [c]	5.5
Farm	3,055	1.1 [c]	1.7	1,651	14.1 [c]	-23.4	4,210	0.3 [c]	-30.6
Nonfarm	58,535	21.0 [c]	5.6	2,200	18.8 [c]	5.2	129,340	9.3 [c]	7.3
Earnings by industry									
Farm	3,519	1.3 [c]	0.9	1,848	15.8 [c]	-21.8	6,170	0.4 [c]	-23.1
Nonfarm	275,674	98.7 [c]	12.7	9,867	84.2 [c]	-1.5	1,387,599	99.6 [c]	5.4
Private	227,393	81.4 [c]	14.0	5,341	45.6 [c]	-3.6	1,013,495	72.7 [c]	4.7
Agricultural services and other	2,381	0.9 [c]	2.7	(L)	(L)	(L)	2,997	0.2 [c]	-4.8
Mining	3,317	1.2 [c]	156.7	69	0.6 [c]	-18.8	2,114	0.2 [c]	-15.1
Construction	32,538	11.7 [c]	8.6	1,424	12.2 [c]	-35.9	72,614	5.2 [c]	5.0
Manufacturing	24,885	8.9 [c]	19.4	724	6.2 [c]	23.8	278,940	20.0 [c]	2.3
Nondurable goods	13,448	4.8 [c]	10.0	(D)	(D)	(D)	85,341	6.1 [c]	-7.1
Durable goods	11,437	4.1 [c]	32.8	(D)	(D)	(D)	193,599	13.9 [c]	7.1
Transportation and public utilities	23,375	8.4 [c]	20.1	842	7.2 [c]	39.4	62,952	4.5 [c]	-1.1
Wholesale trade	15,174	5.4 [c]	17.3	485	4.1 [c]	10.5	46,939	3.4 [c]	10.1
Retail trade	43,870	15.7 [c]	17.4	622	5.3 [c]	15.8	147,568	10.6 [c]	5.9
Finance, insurance, and real estate	9,830	3.5 [c]	-1.7	(L)	(L)	(L)	56,831	4.1 [c]	-2.0
Services	72,023	25.8 [c]	10.2	1,111	9.5 [c]	10.8	342,540	24.6 [c]	8.0
Government	48,281	17.3 [c]	7.3	4,526	38.6 [c]	1.0	374,104	26.8 [c]	7.5
Federal civilian	8,285	3.0 [c]	-2.2	2,317	19.8 [c]	-2.3	183,707	13.2 [c]	10.3
Military	1,932	0.7 [c]	9.3	84	0.7 [c]	0.0	15,548	1.1 [c]	21.4
State and local	38,064	13.6 [c]	9.5	2,125	18.1 [c]	5.0	174,849	12.5 [c]	3.6

[a] Income components as a percent of total personal income.
[b] Per capita personal income as a percent of U.S. average.
[c] Earnings components as a percent of total earnings.

(D) Not shown to avoid disclosure of confidential information.
(L) Less than $50,000. Data included in totals.
(U) Unable to calculate due to zero or negative data.

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economics Information System.

Utah Business Statistics

UTAH DATA	Mar. 1990	Mar. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	23,535	25,280	7.4%	24,705	22,813	8.3%
New Corporations (no.)	504	520	3.2%	505	480	5.1%
New Car, Truck, and Motor Home Sales (no.)	5,308	4,201	-20.9%	4,902	5,037	-2.7%
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	77.00	79.30	3.0%	77.08	73.08	5.5%
Lambs (cwt)	55.90	40.90	-26.8%	45.34	58.77	-22.8%
Milk Wholesale (cwt)	13.10	10.60	-19.1%	12.12	13.02	-6.9%
Alfalfa Hay, Baled (per ton)	86.00	NA	NA	NA	84.67	NA
Cattle Slaughtered (live weight) (thous. of lbs.)	49,159	48,585	-1.2%	46,498	47,502	-2.1%
Construction						
Total Construction (thous. of dol.) 1	76,479.3	76,572.0	0.1%	85,344.5	78,272.6	9.0%
Residential	50,119.8	50,672.8	1.1%	44,893.1	38,566.0	16.4%
Nonresidential	15,446.4	14,871.8	-3.7%	27,194.2	23,876.7	13.9%
Additions, Alterations, and Conversions	10,913.1	11,027.2	1.0%	13,257.2	15,829.9	-16.3%
Total Permit Construction (thous. of dol.) 2	81,971.2	87,067.7	6.2%	105,834.8	83,623.7	26.6%
Residential	51,004.2	53,743.3	5.4%	49,487.2	40,021.2	23.7%
Nonresidential	17,512.7	22,074.9	26.1%	35,861.2	29,468.8	21.7%
Additions, Alterations, and Repairs	13,454.3	11,249.5	-16.4%	20,486.5	14,133.7	44.9%
New Dwelling Units (no.)	685	608	-11.2%	591	497	18.9%
Employment						
Civilian Labor Force (thous.)	777.1	797.6	2.6%	798.1	793.3	0.6%
Total Employed Persons	737.7	759.9	3.0%	762.1	757.2	0.6%
Unemployed Persons	39.4	37.7	-4.3%	36.0	36.1	-0.3%
Percent Total Labor Force	5.1	4.7	-7.8%	4.5	4.6	-1.5%
Employees on Nonagricultural Payrolls (thous. of jobs)	708.1	737.5	4.2%	731.2	699.6	4.5%
Manufacturing	104.9	108.1	3.1%	107.3	104.0	3.2%
Mining	8.3	8.7	4.8%	8.7	8.3	4.8%
Contract Construction	23.7	25.8	8.9%	27.7	26.3	5.2%
Transportation, Communication, and Utilities	41.8	42.3	1.2%	42.9	41.3	4.0%
Wholesale Trade	37.3	38.5	3.2%	39.7	38.4	3.3%
Retail Trade	128.7	133.5	3.7%	136.7	129.6	5.5%
Finance, Insurance, and Real Estate	33.9	34.9	2.9%	34.4	33.6	2.6%
Services 3	177.5	190.2	7.2%	183.2	170.6	7.3%
Federal Government	40.4	39.4	-2.5%	39.4	40.2	-1.9%
State Government 4	42.0	43.6	3.8%	42.1	40.6	3.9%
Local Government 4	69.6	72.5	4.2%	69.1	66.7	3.5%
Average Weekly Hours						
Manufacturing	39.6	39.6	0.0%	39.8	40.0	-0.6%
Mining	42.4	42.0	-0.9%	44.3	41.4	7.1%
Wholesale Trade	36.2	36.0	-0.6%	37.7	37.2	1.5%
Retail Trade	25.5	25.9	1.6%	26.6	27.2	-2.2%
Amount of Unemployment Compensation (thous. of dol.)	6,608.7	7,370.2	11.5%	5,180.9	4,904.9	5.6%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	1,896.8	NA	NA	NA	2,104.5	NA
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	59,267.2	NA	NA	NA	160,384.5	NA
Sales and Use Tax	2,636.3	NA	NA	NA	57,617.3	NA
Motor Fuel Tax	9,707.5	NA	NA	NA	11,612.0	NA
Individual Income Tax	26,560.8	NA	NA	NA	53,522.8	NA
Corporation Franchise Tax	622.0	NA	NA	NA	4,720.0	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,578.1	3,600.1	0.6%	3,642.1	3,730.5	-2.4%
Crude Oil (thous. of bbls.)	2,401.0	2,271.4	-5.4%	2,255.1	2,336.1	-3.5%
Natural Gas (mil. of cu. ft.)	26,597.9	28,695.9	7.9%	27,210.2	23,504.7	15.8%
Coal (thous. short tons)	1,960.0	1,787.0	-8.8%	1,831.9	1,768.8	3.6%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	1,091,198	1,055,695	-3.3%	999,056	1,003,760	-0.5%
Highway Traffic Count Across State Lines	42,678	45,540	6.7%	44,751	41,637	7.5%
Transient Room Tax (thous. of dol.)	10.0	NA	NA	NA	564.3	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	557.4	588.8	5.6%	1,122.5	1,115.4	0.6%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	512,580	532,301	3.8%	522,051	504,182	3.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	192,035	202,473	5.4%	197,831	187,588	5.5%
Electric Customers (Residential)	489,513	NA	NA	NA	485,442	NA
Electric Customers (Commercial)	49,142	NA	NA	NA	48,650	NA
Natural Gas Customers (Residential & Commercial)	487,490	499,117	2.4%	489,623	476,631	2.7%
Natural Gas Customers (Industrial)	565	579	2.5%	576	567	1.6%

Utah Business Statistics

UTAH DATA	Mar. 1990	Mar. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	57.4r	60.4	5.2%	60.0	57.5	4.4%
Unemployment Rate	3.9r	3.9	0.0%	4.4	4.2	3.4%
Auth. Permit Construction (thous. of dol.)	10,784.7	12,470.3	15.6%	11,376.1	10,745.0	5.9%
New Dwelling Units (no.)	120	81	-32.5%	77	74	5.0%
Postal Receipts (thous. of dol.)	687.7	738.9	7.4%	654.6	636.1	2.9%
Electric Customers (Residential)	49,930	50,599	1.3%	50,188	49,353	1.7%
Electric Customers (Commercial)	3,788	3,789	0.0%	3,706	3,663	1.2%
Natural Gas Customers (Residential)	53,017	54,123	2.1%	53,293	52,089	2.3%
Natural Gas Customers (Industrial)	56	56	0.0%	57	56	1.2%
Telephone Lines in Service (Mt. Bell)(Residential)	59,692	61,934	3.8%	60,925	57,785	5.4%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,635	13,278	5.1%	13,006	12,193	6.7%
Salt Lake County						
Non-Ag. Employment (thous.)	359.9r	375.2	4.3%	372.2	356.6	4.4%
Unemployment Rate	3.9r	3.5	-10.3%	4.0	4.1	-3.0%
Auth. Permit Construction (thous. of dol.)	36,109.6	35,670.9	-1.2%	47,904.4	34,609.2	38.4%
New Dwelling Units (no.)	285	245	-14.0%	201	174	15.9%
Postal Receipts (thous. of dol.)	8,049.3	8,771.8	9.0%	8,057.4	8,201.2	-1.8%
Electric Customers (Residential)	246,479	249,556	1.2%	247,494	243,949	1.5%
Electric Customers (Commercial)	21,186	21,434	1.2%	21,235	20,980	1.2%
Natural Gas Customers (Residential)	229,805	233,571	1.6%	229,720	225,601	1.8%
Natural Gas Customers (Industrial)	245	249	1.6%	246	245	0.5%
Telephone Lines in Service (Mt. Bell)(Residential)	241,286	250,193	3.7%	245,868	237,118	3.7%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	116,620	122,502	5.0%	119,728	113,969	5.1%
Utah County						
Non-Ag. Employment (thous.)	91.7r	98.3	7.2%	94.8	88.7	6.9%
Unemployment Rate	3.5r	3.7	5.7%	3.9	4.1	-5.5%
Auth. Permit Construction (thous. of dol.)	12,780.7	10,639.4	-16.8%	17,372.4	12,413.5	39.9%
New Dwelling Units (no.)	124	81	-34.7%	108	78	38.8%
Postal Receipts (thous. of dol.)	1,735.5	2,300.2	32.5%	1,727.6	1,527.8	13.1%
Electric Customers (Residential)	53,139	55,788	5.0%	54,528	53,239	2.4%
Electric Customers (Commercial)	6,446	7,083	9.9%	6,962	6,477	7.5%
Natural Gas Customers (Residential)	64,499	66,099	2.5%	64,990	63,430	2.5%
Natural Gas Customers (Industrial)	73	76	4.1%	74	73	1.3%
Telephone Lines in Service (Mt. Bell)(Residential)	66,895	69,286	3.6%	67,678	66,415	1.9%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	20,505	21,897	6.8%	21,374	20,551	4.0%
Weber County						
Non-Ag. Employment (thous.)	65.8r	66.7	1.4%	67.0	64.4	3.9%
Unemployment Rate	5.2r	4.9	-5.8%	5.6	5.4	4.6%
Auth. Permit Construction (thous. of dol.)	9,069.6	5,617.8	-38.1%	6,007.6	6,792.5	-11.6%
New Dwelling Units (no.)	51	42	-17.6%	39	48	-18.6%
Postal Receipts (thous. of dol.)	706.0	779.2	10.4%	739.7	706.3	4.7%
Electric Customers (Residential)	54,724	55,523	1.5%	55,088	54,358	1.3%
Electric Customers (Commercial)	5,099	5,258	3.1%	5,148	5,042	2.1%
Natural Gas Customers (Residential)	51,589	52,322	1.4%	51,591	50,736	1.7%
Natural Gas Customers (Industrial)	82	77	-6.1%	81	84	-3.7%
Telephone Lines in Service (Mt. Bell)(Residential)	46,696	48,132	3.1%	47,398	47,292	0.2%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	13,099	13,517	3.2%	13,327	12,494	6.7%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report.*
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA	Not Available
r	Revised

Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture.*
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report.*
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

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NATIONAL DATA	Mar. 1990	Mar. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,375.4	5,557.7	3.4%	5,510.7	5,269.3	4.6%
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,594.7	4,750.4	3.4%	4,688.8	4,449.4	5.4%
Industrial Production Indexes (seasonally adjusted) (1987=100)	108.9	105.0	−3.6%	108.5	108.2	0.3%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	532.5	535.3	0.5%	533.7	517.3	3.2%
Net Exports of Goods and Services (bil.) (qtly.)	−30.0	13.5	−145.0%	−20.4	−41.5	−50.9%
Exports of Goods and Services (bil.) (qtly.)	661.3	694.5	5.0%	681.1	639.2	6.6%
Imports of Goods and Services (bil.) (qtly.)	691.3	681.0	−1.5%	701.5	680.6	3.1%
Index of Leading Indicators (1982=100)	145.4	141.4	−2.8%	142.7	144.8	−1.5%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	128.7	135.0	4.9%	132.4	125.6	5.4%
CPI-U (All Urban Consumers) Food & Beverages	131.2	136.3	3.9%	133.4	126.9	5.1%
CPI-U (All Urban Consumers) Housing	126.8	132.6	4.6%	130.0	124.3	4.6%
CPI-U (All Urban Consumers) Transportation	116.8	122.3	4.7%	122.2	115.5	5.8%
CPI-U (All Urban Consumers) Medical Care	158.7	173.7	9.5%	166.6	152.3	9.3%
CPI-U (All Urban Consumers) Energy	95.5	99.7	4.4%	103.8	96.1	8.0%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	117.0	120.6	3.1%	120.1	114.9	4.5%
GNP Price Deflator (1982=100) (qtly.)	129.5	134.8	4.1%	132.8	127.5	4.1%
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.8	125.3	0.4%	124.9	124.2	0.6%
Total Civilian Employment (mil.)	118.2	116.8	−1.2%	117.6	117.7	−0.0%
Unemployment Rate	5.3	6.8	28.3%	5.8	5.3	10.2%
Construction						
Total Construction (mil. of dol.)	22,220.0	16,276.0	−26.8%	18,566.8	22,519.8	−17.6%
Residential	10,211.0	6,785.0	−33.6%	8,108.8	10,174.2	−20.3%
Nonresidential	7,723.0	5,747.0	−25.6%	6,626.3	8,222.9	−19.4%
Non-Building	4,286.0	3,744.0	−12.6%	3,831.9	4,122.7	−7.1%
New Dwelling Units (no.)	110,018	69,396	−36.9%	86,145	113,250	−23.9%
Interest Rates						
Federal Funds Rate	8.28	6.12	−26.1%	7.64	8.92	−14.3%
Short Term (3-month Treasury bill rate)	7.87	5.91	−24.9%	7.08	7.92	−10.6%
Long Term (30-year Treasury bond yields)	8.74	8.38	−4.1%	8.65	8.44	2.5%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	10.00	9.00	−10.0%	9.80	10.64	−7.9%
Mortgage Rates (new homes)	9.70	9.16	−5.6%	9.60	9.80	−2.1%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F.W. Dodge Report, McGraw-Hill: National Construction Data.

Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics: Consumer Price Indexes, Producer Price Index.

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Utah Economic and
Business Review

Volume 51
Number 7
July 1991

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UTAH'S COMPOSITE MATERIALS INDUSTRY

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Senior Research Analyst

In 1991, a study of Utah's composite materials industry was completed by the Bureau of Economic and Business Research for the Utah Division of Community and Economic Development. A synopsis of that study provides the basis for this review.

In this article, the terms "composite materials" and "advanced materials" are used interchangeably. These materials are generally classified as metals, ceramics or polymers which consist of fibers of one material held together by a matrix of a second material. Composites are designed in such a way that the fibers provide strength, stiffness, and fracture toughness and the matrix binds the fibers together in the proper orientation. The most common composite structures are ceramic composites (CMCs), polymer matrix composites (PMCs) and metal matrix composites (MMCs).

Materials within these categories are termed "advanced" if they exhibit properties (high temperature strength, or high stiffness per unit, for example) that are significantly better than those of conventional materials such as steel and aluminum.[1]

This analysis focuses on the advanced material component of these three broad sectors. Metal alloys, unreinforced plastics, and plastics reinforced with low-stiffness glass fibers have been excluded.

A Profile of Utah's Composite Materials Industry

Utah boasts a high concentration of well-established, experienced companies both developing and using composite materials. Utah is unique by virtue of the fact that both composite producers (companies which develop advanced composite materials) and custom shapers (companies which manufacture products from composite materials) are located in the state.

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[1] U.S. Congress, Office of Technology Assessment, Advanced Materials by Design, OTA-E-351 (Washington, D.C.: U.S. Government Printing Office, June 1988).

Structure of the Industry

Employment (May 1991)	2,123
Number of companies	27
Number of companies with more than 100 employees	9

Currently, 27 companies employing a total of 2,123 people are involved in either the development, manufacture, or production of advanced composite materials and shapes in Utah.[2] The majority of these companies are small; only nine firms employed more than 100 people in the first quarter of 1991.

Although composite materials represent a small component of the state's manufacturing base at the present time, it is a growing sector of the Utah economy. Over the past 15 months, employment at composite companies in Utah increased 9.1 percent, primarily in the area of PMC shaping.

While all three areas of advanced materials are represented in Utah's composite industry, the majority of composite companies utilize PMCs (equally distributed between carbon fibers and reinforced plastics) in their shaping activities (Table 1). Of the companies included in this study, only seven produce advanced materials which are used in the manufacture of end product. Three produce PMCs, two produce CMCs and two produce MMCs. Most companies are not in advanced material development or production, but rather, purchase the materials from producers located throughout the world.

In the area of PMCs, Utah has an especially high concentration of companies which manufacture products using filament winding techniques. This is a process in which fibers are coated with resins, wrapped around a mandrel, and then cured.

Hercules Aerospace, one of the largest participants in the user segment of the composites market in Utah, is also one of the largest producers of PAN-based carbon fibers and prepregs for worldwide consumption.[3,4]

Hercules is also the most vertically integrated composite company in Utah. It is both a large scale producer of composite materials and associated products, and a captive user (manufacturing products from composite materials for the end user market).

Other composite material developers include Ceramatec, Inc. (R&D of structural ceramics and CMCs); Norton Company (R&D facility); and VaporFab/Inco (R&D of nickel-coated fabric). Both Norton Company and VaporFab/Inco are R&D facilities that have yet to commercialize a product.

Suppliers

Approximately one-third of the companies which manufacture products from carbon fibers and prepregs purchase some of their materials locally from Hercules Aerospace. Other large suppliers of carbon fiber, prepregs, and fiberglass include: Ciba-Geigy (PAN fibers), Du Pont (Aramid fibers), Owens-Corning (Glass), ICI Fiberite (Prepregs), Erskine Johns (distributor), Fasco (distributor), and FiberChem (distributor). With the exception of Hercules Aerospace, none of these suppliers manufacture product in Utah. Base resin and epoxy suppliers include: Celanese; Ciba-Geigy; Dow Chemical; Shell; Amoco; and Erskine Johns. Again, none of these suppliers manufacture product in Utah.

Products and Customers

Composite materials companies in Utah manufacture an impressive array of products for many sectors of the U.S. economy. However, the main drivers for growth in the state's composite industry have been the military and aerospace sectors—both are especially heavy users of filament wound carbon fiber composites. At present, over half of Utah's composite material shapers produce products for one of these two sectors. However, many companies are reducing their dependence on military contracts and are looking for commercial applications.

Secondary uses include the manufacture of sports equipment and commercial aircraft. A sample of products manufactured by Utah composite material companies is shown on the following page. Table 2 shows the primary and secondary customers of these companies.

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[2] This total includes companies which (1) produce composite materials, (2) manufacture products using composite materials, or (3) design industrial equipment or tooling processes used by composite companies. It does not include companies which sell fibers, prepregs, resins, and epoxies that are produced outside of Utah.

[3] PAN is the acronym for Polyacrylonitrile, the precursor for carbon fiber.

[4] Prepregs are fibers impregnated with resin.

Military/Aerospace Products
F-16 reconnaissance pods
C-17 transport doors
Composite chassis for military tanks
Rocket motor cases
Survivable external fuel tanks
Navy submersibles
Radar equipment/domes
Satellite antennae

Sports/Recreation
Golf shafts
Rafting oars
Softball bats
Ski poles
Skis
Amusement park rides
Playground equipment
Bicycle frames

Aircraft Components
Boeing aircraft waste tanks
Aircraft airframe
Rotor blades for helicopters
Camera radomes
Hydraulic and pneumatic cylinders
Boeing 747 honeycomb panel antenna
Antenna covers

Medical Products
Artificial graphite leg
Graphite knee brace
Prosthetic foot
In-grown toenail treatment
X-ray tables

Automotive Products
Automobile drive shafts
Monorail cars
Train modules
Gas tanks

Other
Industrial containers
Chemical tanks
Container dome covers
Polycrystalline products
Church steeples

Impediments to Growth

Nationally, consumption of advanced composites has been growing at an annual rate of 15 to 20 percent. Despite the fact that demand for composites has been steadily increasing over the past decade, significant barriers still exist to their widespread use, primarily the cost of raw material and manufacturing processes, market resistance, and a shortage of skilled engineers and technicians.

Expensive Manufacturing Processes

More than any other single barrier, the lack of reliable, low-cost fabrication processes inhibits the use of advanced materials in commercial applications. For example, many companies indicated they could reduce the price of the end item if they did their own prepregging. However, the expense of tooling up is prohibitive due to high machinery costs and the time-consuming nature of the prepregging process.

Furthermore, industry experts concede that technologies such as advanced ceramics and composites are still too new to warrant large scale investments in automation processes until these new materials and their properties are better understood.

Cost of Raw Materials

The potential for composites is huge but the cost of raw materials, especially carbon fibers and prepregs, is a major stumbling block in its widespread use. Although substantial declines in the price for raw materials have occurred over the past decade (reductions as high as 50 percent have been reported) the per-pound cost of composite materials is still prohibitive when compared to traditional materials used in mass produced consumer goods. In order for alternative uses to become feasible, the cost of fibers will need to parallel that of commonly used materials such as aluminum, steel, and wood. Industry experts agree that if a high-strength carbon fiber costing $3 to $5 per pound were available, major new opportunities would open up for use of composite materials in the automotive and construction industries.

Market Resistance

"If advanced materials are considered on a dollar-per-pound basis as replacements for steel or aluminum in existing designs, they cannot compete." This has often been the perception of potential user industries. However, per-pound costs and part-for-part replacement costs are not the only valid bases for comparisons between conventional and advanced materials. For example, advanced materials offer the opportunity to consolidate costs and reduce manufacturing and assembly costs. The problem lies in encouraging the user to adopt a long-term perspective, rather than a short-term, market-driven perspective.

Table 1
Characteristics of Utah's Composite Companies

	Composite Employment	Composite Producer	Composite Shaper	Date Founded
Polymer Matrix Composites				
Advanced Composites	17		X	1966
AeroTrans	75		X	1986
Applied Composites	20		X	1986
Arrow Dynamics	100		X	1981
Carbon Fiber Products	64		X	1985
Contour Composites	25		X	1980
CRP, dba Springlite	30		X	1983
Delta Reinforced Plastics	75		X	1981
EDO Fiber Science	135		X	1970
Evolution Ski	11		X	1985
Fiber Dynamics	4		X	1990
FiberTek	175		X	1978
Haelan	2		X	1990
Hercules Aerospace	175	X	X	1958
Leopete Technologies	17		X	1962
Mountain States Fiber	15		X	1973
Parker Packing	250	X	X	1967
Quality Composites	32		X	1985
R-Cubed Composites	35		X	1985
Thiokol, Inc.	250	X	X	1957
Totals	**1,507**	**3**	**20**	
Ceramic Matrix Composites				
Ceramatec, Inc.	110	X	X	1974
Norton Co.	30	X		1976
Totals	**140**	**2**	**1**	
Metal Matrix Composites				
Flameco	250	X	X	1968
Megadiamond	150		X	1966
VaporFab/Inco	5	X		1987
Totals	**405**	**2**	**2**	
Equipment/Processing Tech				
EnTec	60			1962
Radius Engineering	11			1985
Totals	**71**	**0**	**0**	

Table 2
Primary and Secondary Customers of Utah Composite Companies

Company	Military/ Aerospace	Commercial Aircraft	Sports/ Recreation	Medical Products	Automotive Industry	Other
Advanced Composites	X		m		m	
AeroTrans	X				X	
Applied Composites			X	X		
Arrow Dynamics	m		X			
Carbon Fiber			X			
Ceramatec, Inc.				X	X	
Contour Composites	m	X				
CRP (Springlite)			X	X		
Delta Plastics						X
EDO Fiber Science	m	X				
Evolution Ski			X			
Fiber Dynamics					X	
Fibertek	X	m				
Flameco	X					
Haelen					X	
Hercules Aerospace	X					
Leopete Technologies	X	X				
Megadiamond						X
Mountain States Fiber			X			X
Norton Co.						X
Parker Packing	m	X				
Quality Composites	X		X			
R-Cubed Composites	X	X				
Thiokol	X					
VaporFab/Inco						X

X: Major Customer m: Secondary Customers

Source: Bureau of Economic and Business Research

Broader use of advanced materials will require changes in the attitudes of researchers and end users who are accustomed to designing structures and thinking in terms of more conventional materials.

Shortage of Skilled Labor

Some Utah companies have had difficulty finding engineers and technicians with adequate composite materials manufacturing experience. This problem has been somewhat alleviated with the creation of the Composite Materials Technology Program at the Salt Lake Community College. However, the availability of engineers who are knowledgeable in the area of advanced materials is limited.

Polymer Matrix Composites

Polymer Matrix Composites are usually defined as materials reinforced with continuous fibers, having properties comparable to high-stiffness glass or better, and using resins with properties comparable to epoxies or better. Usually excluded are E-glass reinforced polyester or vinylester matrices.[5]

PMCs are often divided into two groups: reinforced plastics, and "advanced composites". Reinforced plastics, which are relatively inexpensive, typically consist of polyester resins reinforced with low-stiffness glass fibers. They have been in use for approximately 30 to 40 years in applications such as boat hulls, corrugated sheet, pipe, automotive panels, and sporting goods.

Advanced composites, which have only been in use for approximately 15 to 20 years primarily in the aerospace industry, have superior strength and stiffness. The continuous reinforcing fibers of current use are glass, graphite (carbon), and Aramid. Other organic fibers, such as oriented polyethylene, are also becoming important. Of the continuous fibers, glass has a relatively low stiffness; however, its tensile strength is competitive with the other fibers and its cost is dramatically lower. Only when stiffness or weight are at a premium would Aramid and graphite fibers be used.

Carbon fiber, derived from Polyacrylonitrile (PAN), reinforced with resin matrix, is by far the most commonly used nonfiberglass fiber composite in the advanced fiber composite industry. The greatest demand for carbon fibers comes from the aerospace industry. It is used extensively in aircraft wings and struts because it adds strength and stiffness while eliminating weight. Sports equipment manufacturers have also found different uses for carbon fibers incorporating them into tennis racket frames and golf club shafts.

Another important advanced fiber composite is Aramid fiber (KEVLAR), for which Du Pont holds the patent. Aramid fibers, accounting for over 20 percent of all production, are used chiefly for reinforcing rubber products; and to a lesser degree, for structural reinforcement in aircraft and space hardware. Specialized fibers such as boron, ceramic, and other polymers account for the remainder.

Market Size and Demand

Data provided by the Suppliers of Advanced Materials Association (SACMA) show that almost $1 billion worth of fibers and prepregs were shipped worldwide during 1989. Aerospace usage continued to account for the majority of industry shipments, followed by sports, marine and recreational uses. Table 3 shows the semi-annual shipment data for 1990 compared to annual shipment data for the preceding five-year period.

SACMA/ETAC estimates that its statistics, which are drawn from actual member company data, represent over 90 percent of the shipments of advanced composite fibers and prepregs within North America, Western Europe, and the Far East. These figures do not include prepreg composites utilized for circuit board applications, or fibers and prepregs produced and converted to finished parts within member companies, i.e., fibers and prepregs manufactured and used by Hercules in its own production activities.

Information on total production (fibers and prepregs produced in-house and used for constructing composite structures, and fibers and prepregs sold to non-fiber producing companies) is incomplete. However, estimates provided by a contractor report prepared for the Office of Trade Administration indicates that production value in 1985 was approximately $2.1 billion divided as follows: U.S., $1.3 billion; Western Europe, $600 million; and Japan, $200 million.

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[5] Office of Technology Assessment.

In the U.S., PMC development has been driven by military and space programs; whereas development in Western Europe is keyed more heavily toward commercial aircraft. The Japanese market is dominated by sporting goods applications.

Demand for PMCs is strong. Consumption estimates for polymer composites show a relatively high growth rate of 15 to 22 percent per year over the next few decades. By 1995, consumption is forecast to be approximately 50 million kilograms valued at $6.5 billion (1985 dollars). By the year 2000, consumption is forecast to be 90 million kilograms valued at about $12 billion.[6]

Utah PMC Producers

Three companies in Utah currently produce and/or develop advanced PMCs: Hercules Aerospace, Thiokol, and Parker Packing. Of the three, Hercules is the only large scale producer. Hercules was an early entrant in the fiber marketplace, and is the single largest U.S. supplier, accounting for over one-third of all carbon fibers supplied by U.S. companies. It is also one of the largest domestic producers of prepregs, and the only Utah company producing and selling prepregs on the open market.

Other Utah companies have developed in-house capabilities for prepregging, but produce for their own manufacturing activities. If financing is arranged, Parker Packing plans to develop thermally-conductive polymers and encapsulation materials. Thiokol is in the process of developing new resin systems, and evaluating a recently developed fiber.

Utah PMC Users

Twenty-one companies, employing over 1,500 people in Utah, use advanced composites in their manufacturing processes. Over half manufacture products for military/aerospace applications. Most of the composites work performed at two of the largest firms (Hercules Aerospace and Thiokol, Inc.) is for this sector exclusively. Advanced Composites, AeroTrans, FiberTek, Leopete Technologies, Quality Composites, and R-Cubed Composites also consider defense and aerospace uses to be primary markets.

Manufacturing products for the recreational market is another important use of composite materials in Utah. Arrow Dynamics designed and built many of the original rides at Disneyland and Disney World, and is the world leader in the custom design of amusement park rides.

The world famous Evolution Skis are manufactured by Evolution, a home-grown Utah company. Evolution manufactures a variety of hand-crafted, custom composite-based skis.

Table 3
Worldwide Shipments of Advanced Composites
1985 through June 1990

Year	FIBERS		PREPREGS	
	Kilograms	U.S. Dollars	Kilograms	U.S. Dollars
1985	5,278,695	$312,970,000	6,993,164	$301,790,000
1986	5,949,489	355,630,000	8,219,274	385,670,000
1987	6,830,359	397,790,000	8,888,224	452,420,000
1988	8,113,806	498,650,000	10,278,340	498,600,000
1989	8,940,858	397,490,000	12,029,233	586,210,000
1990a	4,881,260	230,820,000	6,734,452	336,430,000

[a] 1990 figures represent shipment from January 1990 through June 1990.
Source: Suppliers of Advanced Composite Materials Association and the European Trade Association of Advanced Composite Materials Suppliers.

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[6] Office of Technology Assessment.

Contour Composites, EDO Fiber Science, Leopete Technologies, Parker Packing, and R-Cubed Composites all look to the commercial aircraft sector for their primary customers. These companies manufacture a variety of components that are used in commercial aircraft and helicopters.

Unique products manufactured in Utah for use in the medical industry include a new in-grown toenail treatment called "NailEze"; a system developed by Haelen which utilizes a thin strip of graphite that is bonded to the rounded surface of an ingrown toenail. A graphite epoxy artificial leg and knee braces are manufactured by Applied Composites. CRP designs and manufactures a carbon fiber prosthetic foot.

Fiber Dynamics, a newcomer to the Utah composite industry, has a contract with the Gas Research Institute to design compressed natural gas cylinders for automobiles using natural gas as fuel.

Ceramic Matrix Composites

The area of Ceramic Matrix Composites is a small, but growing subset of the Advanced Ceramics Group. Advanced ceramics are made by consolidating pure microscopic powders at high temperatures. Based on oxides, nitrites, and carbides of silicon, aluminum, titanium and zirconium, advanced ceramics can be used in environments which are too demanding for traditional metals, plastics, or conventional ceramics.

Compared with metals, ceramics are unsurpassed in their high temperature and abrasion resistance properties and chemical stability. However, they also have lower thermal conductivity, thermal expansion and lower toughness—that is, they tend to be brittle. This brittleness causes them to fail suddenly when the applied stress is sufficient to cause cracks that originate as microscopic flaws in the material.

There are several ways to reduce the sensitivity of ceramics to flaws. One is the development of a ceramic matrix composite (CMC). This process incorporates ceramic particulates, whiskers, or continuous fibers in an ceramic matrix. The potential benefits of ceramic composites include increased fracture toughness, high hardness, and improved thermal shock resistance. Fabrication of CMCs reinforced with continuous fiber is very expensive. Considerable R&D will be necessary to optimize fabrication and to decrease the cost to levels that are acceptable for most commercial applications.

Market Size and Demand

The market for CMCs reached $131 million in 1990, with oxides accounting for about 62 percent. The market is expected to grow about 15 percent annually, reaching $249.2 million by 1995, and $509 million in 2000. In terms of volume, the 1990 consumption is expected to be 227,000 kilograms, almost doubling by 1995 (412,500 kilograms). Further growth is expected throughout the rest of the decade, when consumption is projected to reach 816,500 kilograms by the year 2000.[7] Table 4 shows the demand for CMCs by end market.

Table 4
U. S. Ceramic Matrix Composite Market

	Millions of Dollars			AAGR
Sector	1990	1995	2000	(%)
Cutting Tools	32.0	57.5	104.0	12.5
Wear Parts	53.5	119.5	272.0	24.5
Aerospace and Military	34.5	47.0	67.0	6.9
Energy-related and industrial applications	6.7	11.2	19.0	10.9
Engines	4.0	14.0	47.0	28.0
Total	130.7	249.2	509.0	14.6

Note: AAGR = Average Annual Growth Rate.
Source: Ceramic Matrix Composites, Business Communications, Co., Inc., Norwalk, CT.

Oxide matrix composites will continue to dominate the market over the course of the next ten years. This is primarily due to the high volume zirconia composites used for wear parts and alumina cutting tool inserts.

Utah CMC Producers and Users

Ceramatec and Norton Company are both involved in the development of CMCs. Ceramatec has been pursuing development of advanced ceramic materials for much of the past decade. Until recently, the company's emphasis has been limited to R&D of structural ceramics, and experimentation with various methods of embedding carbon fibers in ceramic materials. The company is now pursuing commercial applications for its technology, and is manufacturing oxygen analyzers.

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[7] Materials Processing Report, 1990 Elsevier Publishing Co., Inc. (November 1990).

Norton Company is the R&D facility for a parent company which produces ceramic powders, bearings, filters, armor, and cutting tools. The Utah facility conducts R&D in the area of new materials and uses for cutting tools.

Metal Matrix Composites

Metal Matrix Composites (MMCs) usually consist of metals and metal alloys reinforced with fibers, whiskers, or particulates, and wires. Compared with unreinforced metals, MMCs offer higher specific strength and stiffness, higher operating temperature, and greater wear resistance. MMCs cost much more than monolithic metals and are therefore used only in such high-performance applications as military products and aerospace.

Three Utah companies (VaporFab/Inco, Flameco, and Megadiamond) are involved in some aspect of MMC development. VaporFab/Inco is a small R&D facility in Utah which develops nickel-coated fibers and fabrics. Flameco manufactures aircraft airframes and engines from composite metals such as titanium, aluminum, hastalloy, inconel, stainless steel and heat-resistant alloys. Flameco also engages in development work on metal matrix composites, tialuminides and aluminum lithium, on a limited basis. Flameco's commercial products include engines for General Electric, titanium components for the Douglas MD-11, and assemblies for Boeing 737, 747, and 767 aircraft.

Megadiamond manufactures polycrystalline diamond products used in drilling applications and cutting tool applications. A layer of fine diamond particulates is bonded to a tungsten carbide substrate to form a highly effective cutting tool.

Market Size and Demand

At present, metal matrix composites remain primarily materials of military interest in the U. S. because only the Department of Defense's high performance specifications have justified the materials' cost. Future commercial markets for MMCs remain uncertain for two reasons. First, their physical and mechanical properties rarely exceed those of PMCs or CMCs. Second, MMCs tend to cluster around two types: Type I consists of high-performance composites reinforced with expensive fibers and requiring expensive processing methods. The other consists of low-cost, low-performance composites reinforced with inexpensive particulates and fibers. The cost of Type I is too high for any application but military or aerospace. The cost/benefit advantages of Type II MMC over traditional metal alloys remains in doubt.

Conclusion

The demand for structures made of composite materials will continue its rapid ascent, especially as efficient, cost-effective processes that will allow large-scale manufacturing are developed, and the use of composite materials gains wider acceptance by design engineers.

While all areas of composite materials show promise, the PMC market holds the highest potential, and Utah companies appear to be well-positioned to take advantage of the growing demand for PMC-based products.

Utah has an impressive concentration of well-established, experienced companies which both produce PMCs and structures manufactured from PMC materials. (Of special note is the number of companies with filament winding capability and expertise.) Utah-based PMC companies manufacture a broad range of products for all segments of the end-user market (military, industrial, and commercial). Finally, while finding skilled labor remains a challenge, the presence of Hercules, a major PMC producer, has produced a solid labor pool of polymer composite technologists, and the availabilty of trained composite technicians is generally good as a result of educational programs underway at area community colleges.

With respect to large-scale production of CMC- and MMC-based products, further technological advances are needed. However, there are a handful of companies in Utah which have gained world-wide recognition in the development and use of these advanced materials at both the production and manufacturing stages.

Utah Business Statistics

UTAH DATA	Apr. 1990	Apr. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Total Personal Income (seasonally adjusted) (mil. of dol.) (qtly.)	24,041	NA	NA	NA	22,963	NA
New Corporations (no.)	501	492	−1.8%	504	483	4.3%
New Car, Truck, and Motor Home Sales (no.)	5,173	NA	NA	NA	4,984	NA
Agriculture						
Average Prices Recorded by Farmers (dol.)						
Beef Steers and Heifers (cwt) (thous.)	78.60	78.80	0.3%	77.10	73.55	4.8%
Lambs (cwt)	51.30	42.30	−17.5%	44.59	58.08	−23.2%
Milk Wholesale (cwt)	12.60	10.30	−18.3%	11.93	13.12	−9.0%
Alfalfa Hay, Baled (per ton)	86.00	69.00	−19.8%	81.08	84.75	−4.3%
Cattle Slaughtered (live weight) (thous. of lbs.)	43,841	47,517	8.4%	46,822	47,527	−1.5%
Construction						
Total Construction (thous. of dol.) 1	87,542.2	110,229.4	25.9%	87,235.1	78,329.9	11.4%
Residential	45,966.6	71,029.7	54.5%	46,981.7	39,097.1	20.2%
Nonresidential	25,462.8	30,657.4	20.4%	27,627.1	23,481.0	17.7%
Additions, Alterations, and Conversions	16,112.7	8,542.3	−47.0%	12,626.3	15,751.9	−19.8%
Total Permit Construction (thous. of dol.) 2	107,480.3	123,091.7	14.5%	107,135.8	84,698.0	26.5%
Residential	49,810.4	79,644.7	59.9%	51,973.4	40,434.6	28.5%
Nonresidential	38,370.2	34,340.7	−10.5%	35,525.4	29,952.9	18.6%
Additions, Alterations, and Repairs	19,299.7	9,106.3	−52.8%	19,637.0	14,310.5	37.2%
New Dwelling Units (no.)	631	948	50.2%	618	505	22.5%
Employment						
Civilian Labor Force (thous.)	779.6	806.3	3.4%	799.7	793.5	0.8%
Total Employed Persons	740.7	769.2	3.8%	764.0	757.8	0.8%
Unemployed Persons	38.9	37.1	−4.6%	35.6	35.7	−0.1%
Percent Total Labor Force	5.0	4.6	−8.0%	4.5	4.5	−1.5%
Employees on Nonagricultural Payrolls (thous. of jobs)	715.2	744.8	4.1%	733.7	702.2	4.5%
Manufacturing	105.2	108.0	2.7%	107.6	104.4	3.1%
Mining	8.4	8.7	3.6%	8.7	8.3	4.3%
Contract Construction	25.7	27.9	8.6%	27.9	26.4	5.6%
Transportation, Communication, and Utilities	41.8	42.5	1.7%	42.9	41.4	3.6%
Wholesale Trade	37.7	38.9	3.2%	39.6	38.4	3.1%
Retail Trade	130.2	134.6	3.4%	136.9	130.1	5.2%
Finance, Insurance, and Real Estate	33.9	34.8	2.7%	34.5	33.6	2.7%
Services 3	178.5	192.4	7.8%	184.4	171.7	7.4%
Federal Government	41.1	40.1	−2.4%	39.3	40.2	−2.2%
State Government 4	42.3	43.9	3.8%	42.3	40.7	3.8%
Local Government 4	70.5	73.0	3.5%	69.4	67.0	3.7%
Average Weekly Hours						
Manufacturing	39.2	39.6	1.0%	39.8	39.9	−0.4%
Mining	42.9	44.5	3.7%	44.4	41.5	7.1%
Wholesale Trade	37.9	37.0	−2.4%	37.7	37.1	1.4%
Retail Trade	26.5	26.2	−1.1%	26.6	27.1	−2.1%
Amount of Unemployment Compensation (thous. of dol.)	5,334.5	7,370.2	38.2%	5,350.6	4,919.0	8.8%
Finance						
Savings, Savings and Loan Association (mil. of dol.)	1,856.5	868.5	−53.2%	NA	2,076.5	NA
Tax Collections by the State of Utah (thous. of dol.)						
Total Tax Collections	385,489.7	NA	NA	NA	178,558.3	NA
Sales and Use Tax	158,215.0	NA	NA	NA	69,201.8	NA
Motor Fuel Tax	10,488.1	NA	NA	NA	11,720.5	NA
Individual Income Tax	129,618.7	NA	NA	NA	56,051.2	NA
Corporation Franchise Tax	21,954.8	NA	NA	NA	4,623.4	NA
Production						
Crude Oil to Refineries (thous. of bbls.)	3,414.8	3,608.3	5.7%	3,658.2	3,643.4	0.4%
Crude Oil (thous. of bbls.)	2,285.4	2,206.9	−3.4%	2,248.5	2,335.4	−3.7%
Natural Gas (mil. of cu. ft.)	23,773.5	27,429.6	15.4%	27,514.9	23,701.7	16.1%
Coal (thous. short tons)	1,794.0	2,013.0	12.2%	1,859.2	1,791.2	3.3%
Tourism/Travel						
Air Passengers (total no. on and off)(S.L. Int'l Airport)	887,484	934,408	5.3%	1,002,967	1,004,423	−0.1%
Highway Traffic Count Across State Lines	43,866	45,582	3.9%	44,894	42,113	6.6%
Transient Room Tax (thous. of dol.)	1,036.3	NA	NA	NA	634.9	NA
Visits, State, Nat'l. Parks, Monuments (thous.)	1,051.6	867.2	−17.5%	1,107.1	1,126.0	−1.7%
Utilities						
Telephone Lines in Service (Mt. Bell)(Residential)	511,098	532,114	4.1%	523,802	505,244	3.7%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	192,610	202,631	5.2%	198,666	188,221	5.5%
Electric Customers (Residential)	489,155	NA	NA	NA	486,031	NA
Electric Customers (Commercial)	49,872	NA	NA	NA	48,815	NA
Natural Gas Customers (Residential & Commercial)	487,876	497,906	2.1%	490,459	477,804	2.6%
Natural Gas Customers (Industrial)	569	585	2.8%	578	567	1.8%

Utah Business Statistics

UTAH DATA	Apr. 1990	Apr. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
Davis County						
Non-Ag. Employment (thous.)	58.9r	61.2	3.9%	60.3	57.8	4.4%
Unemployment Rate	3.9r	3.7	-5.1%	4.3	4.2	3.6%
Auth. Permit Construction (thous. of dol.)	9,944.8	14,755.6	48.4%	11,777.0	10,575.5	11.4%
New Dwelling Units (no.)	88	109	23.9%	79	75	5.9%
Postal Receipts (thous. of dol.)	560.4	736.1	31.4%	669.3	642.1	4.2%
Electric Customers (Residential)	49,741	50,627	1.8%	50,262	49,414	1.7%
Electric Customers (Commercial)	3,636	3,841	5.6%	3,723	3,650	2.0%
Natural Gas Customers (Residential)	53,073	54,126	2.0%	53,381	52,197	2.3%
Natural Gas Customers (Industrial)	56	56	0.0%	57	56	1.2%
Telephone Lines in Service (Mt. Bell)(Residential)	59,894	62,107	3.7%	61,110	58,058	5.3%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	12,679	13,019	2.7%	13,034	12,264	6.3%
Salt Lake County						
Non-Ag. Employment (thous.)	363.0r	375.5	3.4%	373.2	357.8	4.3%
Unemployment Rate	4.0r	3.4	-15.0%	3.9	4.0	-3.1%
Auth. Permit Construction (thous. of dol.)	46,623.7	45,974.9	-1.4%	47,850.4	35,677.8	34.1%
New Dwelling Units (no.)	276	355	28.6%	208	180	15.2%
Postal Receipts (thous. of dol.)	8,012.6	8,900.1	11.1%	8,131.4	8,140.2	-0.1%
Electric Customers (Residential)	245,843	249,390	1.4%	247,789	244,234	1.5%
Electric Customers (Commercial)	21,169	21,520	1.7%	21,264	21,008	1.2%
Natural Gas Customers (Residential)	229,399	232,669	1.4%	229,992	225,906	1.8%
Natural Gas Customers (Industrial)	244	250	2.5%	247	245	0.6%
Telephone Lines in Service (Mt. Bell)(Residential)	241,203	250,622	3.9%	246,653	237,712	3.8%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	116,957	122,654	4.9%	120,203	114,371	5.1%
Utah County						
Non-Ag. Employment (thous.)	92.9r	100.7	8.4%	95.6	89.3	7.1%
Unemployment Rate	3.5r	3.5	0.0%	3.9	4.0	-3.9%
Auth. Permit Construction (thous. of dol.)	17,311.7	30,723.0	77.5%	18,490.0	12,473.5	48.2%
New Dwelling Units (no.)	89	170	91.0%	115	79	45.6%
Postal Receipts (thous. of dol.)	1,863.2	1,993.9	7.0%	1,738.5	1,568.6	10.8%
Electric Customers (Residential)	53,448	56,284	5.3%	54,765	53,301	2.7%
Electric Customers (Commercial)	7,284	6,855	-5.9%	6,926	6,592	5.1%
Natural Gas Customers (Residential)	64,886	66,558	2.6%	65,129	63,528	2.5%
Natural Gas Customers (Industrial)	74	80	8.1%	75	73	1.9%
Telephone Lines in Service (Mt. Bell)(Residential)	65,412	68,354	4.5%	67,924	66,326	2.4%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	20,637	21,961	6.4%	21,485	20,499	4.8%
Weber County						
Non-Ag. Employment (thous.)	66.5r	69.0	3.8%	67.1	64.6	3.9%
Unemployment Rate	5.0r	4.7	-6.0%	5.6	5.4	4.5%
Auth. Permit Construction (thous. of dol.)	4,739.3	7,662.1	61.7%	6,251.2	6,453.8	-3.1%
New Dwelling Units (no.)	34	70	105.9%	42	44	-5.3%
Postal Receipts (thous. of dol.)	691.9	828.5	19.7%	751.1	702.9	6.9%
Electric Customers (Residential)	54,752	55,430	1.2%	55,145	54,401	1.4%
Electric Customers (Commercial)	5,135	5,193	1.1%	5,153	5,048	2.1%
Natural Gas Customers (Residential)	51,688	51,990	0.6%	51,616	50,813	1.6%
Natural Gas Customers (Industrial)	83	76	-8.4%	81	84	-4.1%
Telephone Lines in Service (Mt. Bell)(Residential)	46,806	48,163	2.9%	47,511	47,254	0.5%
Telephone Lines in Service (Mt. Bell)(Nonresidential)	13,150	13,600	3.4%	13,365	12,573	6.3%

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1 Obtained from U.S. Bureau of the Census Construction Statistics Division.
2 Obtained from *Utah Construction Report*.
3 Includes services by nonprofit and religious organizations.
4 Includes public schools and college institutions.

NA Not Available
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Sources:

Personal Income	U.S. Department of Commerce, Bureau of Economic Analysis.
New Corporations	Utah Secretary of State.
New Car and Truck Sales	Utah State Tax Commission, Economic and Statistical Unit.
Agriculture	U.S. Department of Agriculture, Utah Agricultural Statistics Service, *Utah Agriculture*
Construction Data	U.S. Bureau of the Census and Bureau of Economic and Business Research, *Utah Construction Report*.
Employment Data	Utah Department of Employment Security.
Savings Information	Utah Savings and Loan Institutions.
Tax Collections	Utah State Tax Commission.
Crude Oil Production	Utah Department of Oil, Gas, and Mining and Area Oil Refineries.
Natural Gas Production	Utah Department of Oil, Gas, and Mining.
Coal Production	U.S. Department of Energy.
Air Passengers	Salt Lake City International Airport, Statistics Division.
Highway Traffic Count	Utah Department of Transportation.
Visits to State and National Parks and Monuments	U.S. Forest Service, Utah State Parks and Recreation Department.
Utilities Data	Cooperating Utah Utility Companies.
Postal Receipts	Postmasters in Davis, Salt Lake, Utah, and Weber Counties.

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NATIONAL DATA	Apr. 1990	Apr. 1991	% Change from Year Ago	12-Month Average This Year	12-Month Average Last Year	12-Month Average % Change
U.S. Gross National Product (seasonally adjusted) (bil.) (qtly.)	5,443.3	NA	NA	NA	5,291.8	NA
Total Personal Income (seasonally adjusted) (bil. of dol.)	4,604.5	4,755.1	3.3%	4,701.3	4,469.9	5.2%
Industrial Production Indexes (seasonally adjusted) (1987=100)	108.8	105.3	-3.2%	108.3	108.3	0.0%
New Plant and Equipment Expenditures by Business (bil.) (qtly.)	535.5	544.2	1.6%	534.4	520.1	2.8%
Net Exports of Goods and Services (bil.) (qtly.)	-24.9	NA	NA	NA	-39.3	NA
Exports of Goods and Services (bil.) (qtly.)	659.7	NA	NA	NA	641.7	NA
Imports of Goods and Services (bil.) (qtly.)	684.6	NA	NA	NA	681.0	NA
Index of Leading Indicators (1982=100)	145.2	142.0	-2.2%	142.4	144.7	-1.6%
Price Indexes						
Consumer Price Indexes (not seasonally adjusted) (1982-84=100)						
CPI-U (All Urban Consumers) All Items	128.9	135.2	4.9%	132.9	126.0	5.4%
CPI-U (All Urban Consumers) Food & Beverages	131.0	137.2	4.7%	133.9	127.5	5.1%
CPI-U (All Urban Consumers) Housing	126.8	132.5	4.5%	130.5	124.7	4.6%
CPI-U (All Urban Consumers) Transportation	117.3	122.2	4.2%	122.6	115.7	6.0%
CPI-U (All Urban Consumers) Medical Care	159.8	174.4	9.1%	167.8	153.4	9.4%
CPI-U (All Urban Consumers) Energy	95.7	99.5	4.0%	104.1	96.1	8.3%
Producer Price Index (not seasonally adjusted) (1982=100)						
Producer Price Index, All Finished Goods	117.0	120.9	3.3%	120.4	115.2	4.5%
GNP Price Deflator (1982=100) (qtly.)	131.0	NA	NA	NA	128.0	NA
Civilian Employment (seasonally adjusted)						
Total Civilian Labor Force (mil.)	124.8	125.7	0.7%	125.0	124.3	0.5%
Total Civilian Employment (mil.)	118.1	117.4	-0.6%	117.6	117.7	-0.1%
Unemployment Rate	5.4	6.6	22.2%	5.9	5.3	11.9%
Construction						
Total Construction (mil. of dol.)	21,195.0	20,929.0	-1.3%	18,630.9	22,274.9	-16.4%
Residential	9,932.0	8,712.0	-12.3%	8,024.6	10,046.3	-20.1%
Nonresidential	7,238.0	7,076.0	-2.2%	6,684.2	8,202.6	-18.5%
Non-Building	4,025.0	5,141.0	27.7%	3,922.1	4,025.9	-2.6%
New Dwelling Units (no.)	107,947	88,098	-18.4%	84,588	111,288	-24.0%
Interest Rates						
Federal Funds Rate	8.26	5.91	-28.5%	7.45	8.79	-15.2%
Short Term (3-month Treasury bill rate)	7.78	5.67	-27.1%	6.91	7.85	-11.9%
Long Term (30-year Treasury bond yields)	8.92	8.29	-7.1%	8.60	8.42	2.2%
Prime Rates Charged by Banks on Short-term Business Loans (avg.)	10.00	9.00	-10.0%	9.71	10.51	-7.6%
Mortgage Rates (new homes)	9.83	9.24	-6.0%	9.55	9.80	-2.6%

Sources: *Survey of Current Business*, U.S. Department of Commerce: U.S. Gross National Product, Total Personal Income, Industrial Production Indexes, New Plant and Equipment Expenditures by Business, Export/Import Data, Index of Leading Indicators, GNP Price Deflator, National Employment Data, Interest Rates.

F.W. Dodge Report, McGraw-Hill: National Construction Data.

Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics: Consumer Price Indexes, Producer Price Index.

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